November 1978

Smithsonian

Père-Lachaise, the legendary Parisian cemetery (p. 108). Above, a couple united in death

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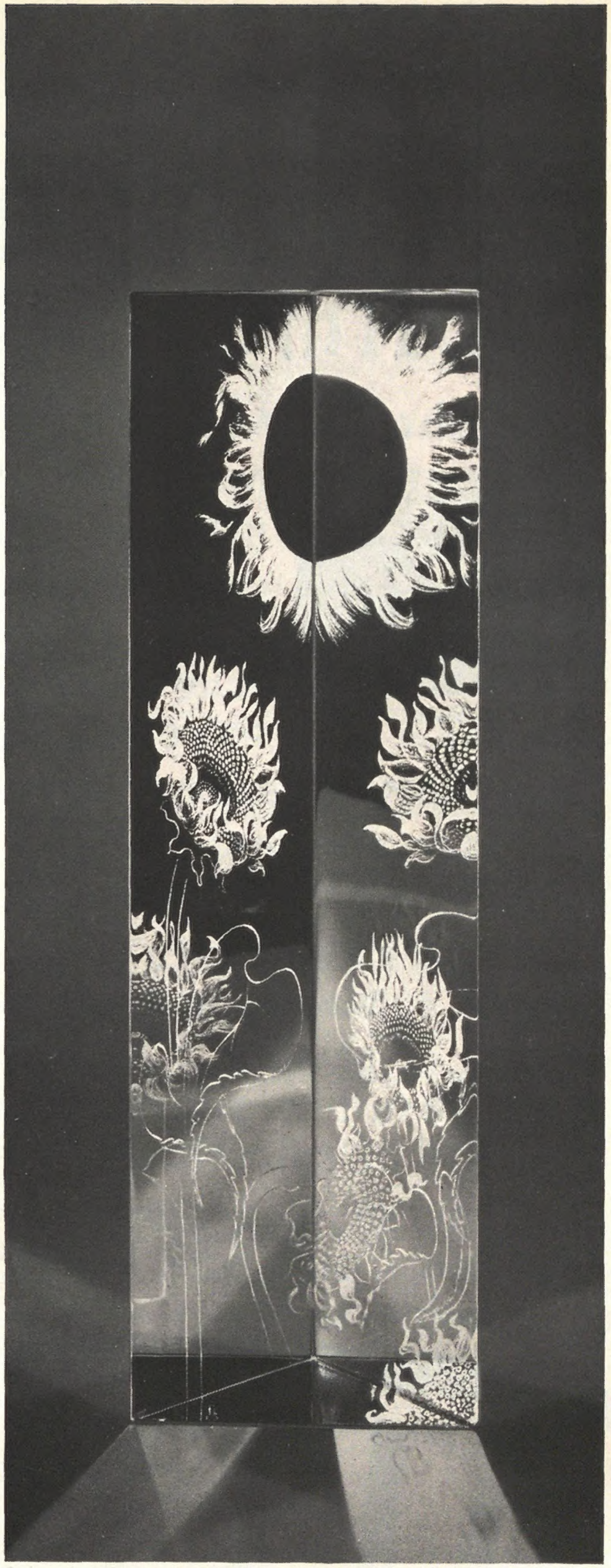

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November 1978

Smithsonian

Volume 9, Number 8

Table of Contents

COVER: The name of the man holding his beloved's head on this anonymous bronze tomb in Père-Lachaise cemetery, Paris, is an intriguing mystery (p. 108) Photograph by Dmitri Kessel

10 The view from the castle: Secretary Ripley's comments

14 Letters to the Editor

26 Phenomena, comment and notes by James K. Page jr.

38 Around the Mall and beyond by Edwards Park

50 Modern bioengineers reinvent human anatomy with spare parts
By Maya Pines, illustrations by Patricia Wynne

60 Dallas, like most U.S. cities, contrasts glitter with squalor
By Richard L. Williams, photographs by A. Y. Owen

72 Some tall tails: the remarkable lemurs of Madagascar
By Alison Jolly

84 Polygraph studies of people with sleep disorders may help us understand the brain's output of nocturnal messages
By Jack Fincher

98 Fame came too late to eccentric painter Louis Eilshemius
By Paul J. Karlstrom

108 The elegies and enigmas of the romantic Père-Lachaise
By Robert Wallace, photographs by Dmitri Kessel

122 Calling the roll of the world's vanishing plants in the new *Red Data Book*, by Edward S. Ayensu

132 James Gordon Bennett, publisher-playboy, led the world on a merry chase whether afloat, aloft or awash, by Julia Lamb

144 The brush of the masters: drawings from Iran and India
By Esin Atil

152 Smithsonian's new Maritime Hall—a breath of sea air
By Edwards Park, photographs by Kim Nielsen

159 Henry Thoreau a woman hater? Well, not really, by Jane Ross

173 Ogopogo, Canada's lake monster: oft seen, never snared
By Mary Moon

186 Book reviews

200 Additional reading

203 Picture credits

204 November events at the Smithsonian

210 Smithsonian tours

212 To get in a famous last word, better find a good first one
By Michael Olmert

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Secretary Ripley's comments

The view from the castle

The great moral imperative of our time is to preserve what we have—whether objects, artifacts or a fragile environment

In addition to our personal ethics, beliefs and rules of conduct, is there one other moral responsibility that we all must accept? Obviously, one should have a sense of faith, the desire to be kind to others and to play fair, and—one hopes—self-discipline. But meanwhile the planet spins, time passes, each day there is change —and always there is the pressure of life itself, the selfish heartbeat in us all.

I believe there is one additional principle which probably transcends all others at present: the necessity for conservation. It is perhaps the last large responsibility, bigger than all of us together. As a museum person, I see the dismaying friability of all objects. Faced with such decay, the constant charge to those who concern themselves with the care of objects—creations partly of the hands of Man—is not merely storage, exhibition, interpretation and instruction, but how to keep them at all. Every day, like grains of sand falling in an hourglass, paintings evaporate, paper crumbles, glass discolors chemically, wood and metals deteriorate a fraction. These objects, these things, which are disappearing even as we breathe, are the ultimate testament of the human race.

If, then, we are reminded of mortality by the deterioration of man-made things, can we transfer this image to the rest of our known space, Earth itself? Conservation of that which we ourselves had no part in creating is an even greater moral responsibility. It is a harder task because it is so much more impersonal. The greatest difficulty in human affairs is in establishing an urgency about things which are not on our time scale. In the context of years, the minute changes that affect the Earth seem barely recognizable. For a generation now, we have failed to connect the imperceptible rate of degradation of the environment with the urgent necessity of planning for its rational use. So what if 50 acres of tropical forest are being destroyed each minute, or even each hour? Most of us still cannot understand a graph which shows, instead of an arithmetical curve, one that is exponential. With deterioration now proceeding at an exponential rate, we still assume that each year's changes are merely added to the preceding years' (four plus four, instead of four *times* four).

Currently there is tension in America over environmental issues. It is assumed that such issues can be decided by legislation or judicial fiat. If a decision is made on such grounds, it will have little if anything to do with the reality of nature. The health of the environment is not, for the most part, subject to human decisions arrived at through the political process. Environmental change, though steady, is difficult to quantify in terms of political office—two years, four years, eight years—and yet these are often the controlling factor in making decisions.

I recall that President Nixon declared war at a billion-dollar clip on cancer. I also recall that King Canute is alleged to have ordered back the tide. The health of the environment will not be assured by adversary arguments over snail darters or dams, but rather by accepting the moral responsibility for conservation, and learning a great deal more about the art of technological manipulation through ecological understanding. Upon that survival depends.

S. Dillon Ripley

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Letters to the Editor

Off-road vehicles

Dear Sir: David Sheridan's "Dirt motorbikes and dune buggies threaten deserts" in your September issue is just one more distressing article in a long line of environmental problems facing this country. It continually shocks me to read how people will tear across a vast expanse of quiet land and run over plants and animals because it is "damned exhilarating."

I hope Mr. Sheridan's article regenerates an interest in saving our precious desert habitat and will be especially noted by those who can stop ORV riders who feel otherwise.

Vincent F. Zauskey
Ashland, Oregon

Dear Sir: Look again at your photograph of the Indian relief images, and let me know which came first: the fence or the off-road vehicles. I claim the vehicles. Besides, what makes the Indian mess art and the off-road vehicle marks an onslaught? Time, I guess. Some future people may wonder what an onslaught the Indians made.

Sal Vecchione
Long Branch, New Jersey

The ORVs came both before and after. The fences were erected in the first place to prevent further onslaughts from ORVs, but, even after these precautions, there were some attempts to break the fences down. Ed.

Dear Sir: Surely, this past winter, there was ample opportunity for anyone to experience the almost eerie hush and peace of a great snowstorm? Nay, not so. Even before the dawn, the silence is torn by

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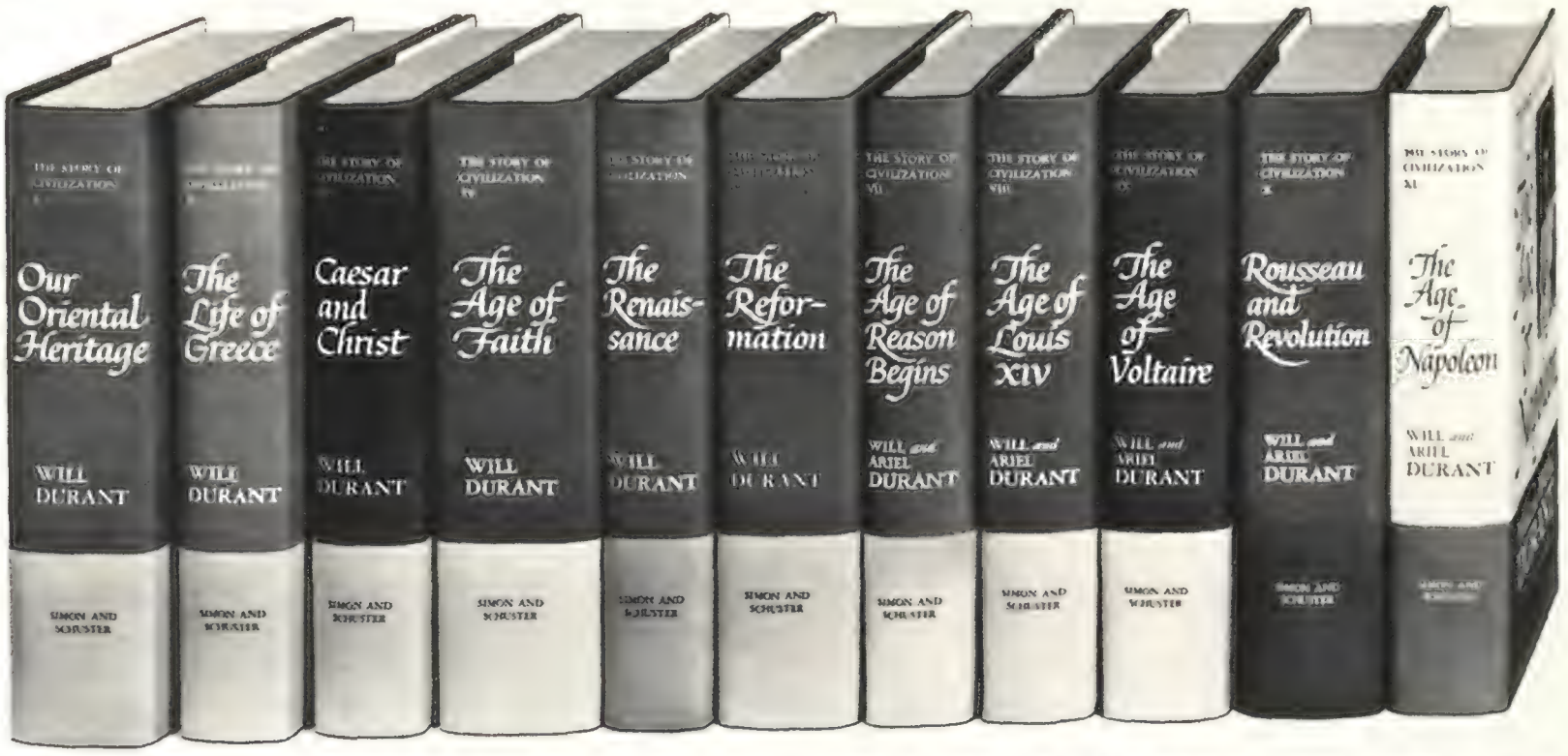

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the roaring of snowmobiles. Throughout the day and late into the night, they zip indiscriminately across fields, woodlands, yards and roads—terrifying sledders and keeping hungry wildlife from foraging.

Looking out over hillsides etched and crisscrossed by a network of random scars, I wondered if my children would ever see the vast purity of trackless snow. Imagine, then, my shock at the state of the great American deserts. These marks will not disappear with the melting snow.
Nancy Springer
Seven Valleys, Pennsylvania

Dear Sir: I have been exploring the Western deserts with off-road vehicles for 38 years. My first ORV was a 1920 Dodge touring car.

For half a century drivers of ORVs lived in harmony with the desert, and their impact was so slight that most people were unaware that deserts, generally, are passable to automobiles. The game warden, the sheep man taking water to his flock, the naturalist, the photographer and the interested observer drove, usually on established trails, without harming it. Then a new type of ORV driver appeared—one who would rather spin his wheels than go someplace. These drivers usually concentrate their depredations in a few small areas.

Most of the vast desert is not overused, and Mr. Sheridan has brought about a misconception by painting all ORV drivers with the same broad brush.
M. D. Isely
Trona, California

Dear Sir: ORV riders' insensitivity to their destruction of the desert ecosystem goes beyond their wish to have a place to play. So long as the human species clings to the chauvinistic idea that we are the ultimate species, people will continue to do as they please and have no regard for other animals and plants. As a biologist, a teacher, and a believer in the right of all organisms to live, the attitude of most of my fellow humans makes me sick.
Leonard H. Friedman
Tarzana, California

Whooping cranes

Dear Sir: Accident-prone but accident-surviving, the young whooper I photographed for your cover [see following page] has been named "Miracle" by biolo-

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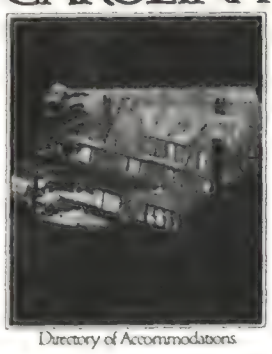

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gist Rod Drewien. In its short life, it has been chased by cows, shot at by poachers, injured by a barbed-wire fence while learning to fly—all mischances which have been fatal to other whooping cranes. Recently, Rod discovered an ugly new cut on Miracle's left femur. The wonder bird had encountered and overcome still another, this time unidentified, peril.

Thomas D. Mangelsen
Boulder, Colorado

Cape May

Dear Sir: Willard Sterne Randall's fascinating article on Cape May, New Jersey, and its restoration is marred by his parenthetical assertion that Abraham Lincoln and his wife checked into a hotel at the resort in the summer of 1849, during a Whig campaign.

The campaign tour that Lincoln undertook for the Whig Party occurred in the summer of 1848. The summer of 1849 found Lincoln pressing his appointment to the post of Commissioner of the General Land Office in the newly established Department of the Interior. Losing the job, he returned to Illinois without spending a vacation day at the resort.

As the Representative in Congress for much of the district that Lincoln represented, I hope that a book I am finishing on Lincoln's career in Congress will end some misrepresentations that have crept into the history of his Congressional era.

Paul Findley
Representative in Congress
Washington, D.C.

Congressman Findley is correct. We also would like to point out that President

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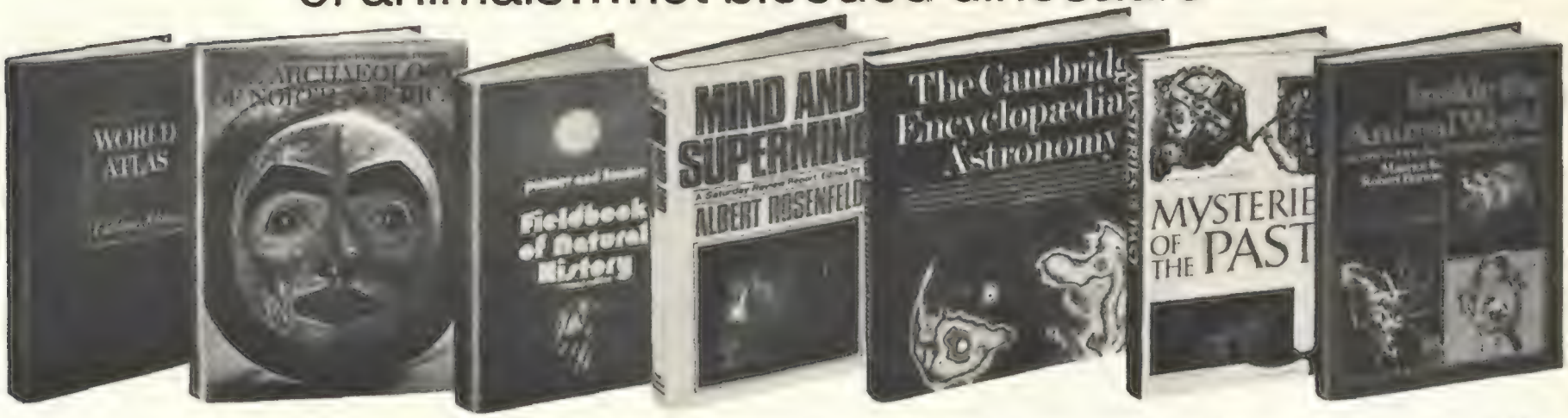

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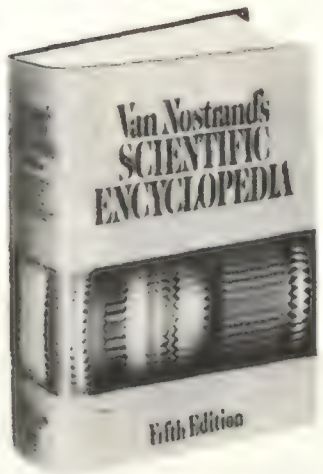

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525-F

Arthur was not accompanied by his wife; he was a widower at the time. Nor was Empress Carlota there; she was mentally ill and confined to a Belgian chateau until her death in 1927. Ed.

Dear Sir: As one of the very few gas lighting engineers left in business, I was surprised to see the "gas-fired streetlamps" caption accompanying your photograph which shows a cluster of modern electric lamps. The real gas lamp is in your picture of the Edward C. Knight Cottage.
John P. Edgar
Philadelphia

Warsaw

Dear Sir: "Rebuilt Warsaw has put its best centuries forward," by Tad and Marianne Szulc, said nothing about what happened to the ghetto. In view of the honor those remnants of the Jews bestowed on the city, I find the omission almost sacrilegious.
Edward Lee
Scarsdale, New York
The article described the number of Jews who were deported to concentration camps and the tens of thousands who died in the Warsaw ghetto revolt of 1943. But for the Memorial to Ghetto Heroes, see below. Ed.

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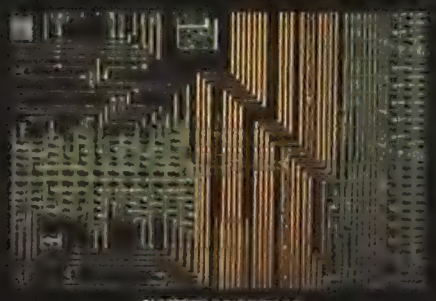

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J.J. Grandville

Dear Sir: Michael Olmert's comprehensive examination of "J.J. Grandville's phantasmagoric view of humanity" provides valuable background material for students of modern fantasy in children's literature.

The discussion of Grandville's influence on Lewis Carroll and his illustrator John Tenniel, Don Marquis, and the Walt Disney studios might well be extended to two current author-illustrators, Maurice Sendak and Mercer Mayer.

Olmert's description of Grandville's skill of turning "apparitions into art" could easily be applied to what Sendak has done in his award-winning *Where the Wild Things Are* or to Mayer's imaginative contributions in *There's a Nightmare in My Closet.*

Patricia R. Gallagher
Elementary-Secondary Department
Oregon College of Education
Monmouth, Oregon

Tall ships at Puget Sound

Dear Sir: I enjoyed Robert A. Weinstein's article on the maritime photography of Wilhelm Hester. Please note that the original glass-plate negatives for most of the Hester photographs that appeared with your article are in the permanent collection of the National Maritime Museum at San Francisco.

John Maounis
Photograph Librarian
National Maritime Museum at
San Francisco

Around the Mall and beyond

Dear Sir: I think Edwards Park's item on fly-powered planes is in the worst possible taste, as well as being needlessly cruel. The poor fly, its feet glued tight to a balsa-wood glider, cannot groom itself and is doomed to carry out its short existence in misery and, finally starving, die. It would be much less cruel to kill it quickly, rather than put it through such needless suffering.

As a recent Girl Scout—I am 14—I find Mr. Park's suggestion that this cruel and bizarre exercise be awarded a Scout badge revolting, and I am shocked that he would suggest it.

Rebecca Menes
Staten Island, New York

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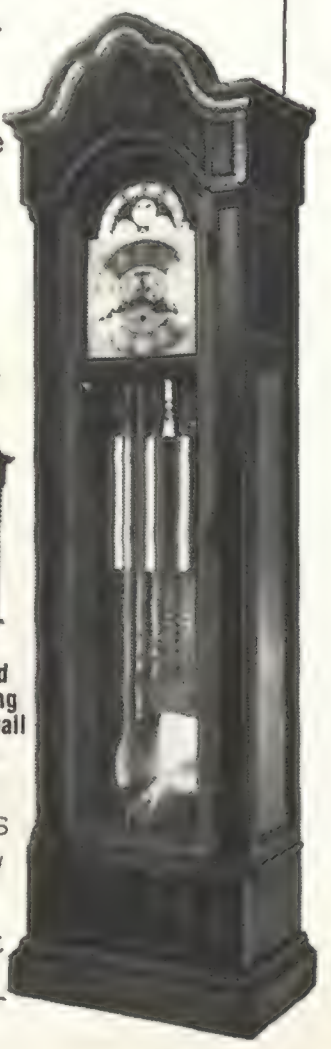

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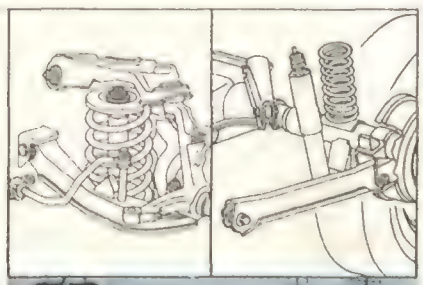

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Phenomena, comment and notes

Thank the dinosaurs for flowers, bad news about American science and using airplanes for murder-suicides

For those inky-fingered scribes who toil to bring us the daily press, there is both good news and bad in a recent study by a San Diego sociologist reported in *Science* (Vol. 201, No. 4357). The good news is that the pen is mightier than the boob tube. The bad news is that, at least in the one area of human affairs studied, the pen may have greater ability to visit evil upon us.

David P. Phillips of the University of California, San Diego, had previously shown in *Science* (Vol. 196, No. 4297) that the frequency of suicides and motor-vehicle crashes increases after well-publicized suicides occur—the more publicity, the greater the increase.

Now Dr. Phillips has trained his statistical eye on the relationship between civil aviation crashes and well-publicized stories about persons who murder two or more people and then commit suicide. In the period from 1968 to 1973, there were 18 well-publicized instances of American murder-suicides. Phillips collected statistics in connection with each of these tragedies, and found a remarkably high number of multifatality private or corporate plane crashes following the murders—461 in all. Such crashes peaked on the third day after the publicity.

A curious thing is that while coverage of these grisly events on TV alone did not cause any statistically significant increase in crashes, newspaper coverage did. The more newspaper coverage of the

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murder-suicide, the more crashes. Furthermore, the increase in crashes occurred primarily in the states where the news stories had been publicized. Thus, Phillips suggests, people (that is, noncommercial pilots) are frequently led, perhaps subconsciously, by newspaper stories to commit murder and suicide by using the planes they fly. He concludes that "the impact of newspaper stories may be at once more general and more grave than was previously expected."

The state of science

American science and technology are in a state of disarray, if you believe what could be read in several recent issues of *Chemical & Engineering News*. American innovation is declining, technological leadership is losing out to foreign competition and labor productivity—closely linked to new technology—is collapsing. Basic research in universities is troubled by outdated equipment. Research support, says this journal, is declining as the federal budget is tightened. One example is that, having spent some $25 billion to get six two-man crews on the moon to scoop up some 850 pounds of lunar material, NASA may be denied a few million dollars more to complete analysis of the moon rocks.

At the same time, and somehow ironically, the demand for scientists and engineers is at a 12-year high—particularly in the electronics and aerospace industries (fewer PhD cab drivers). There are more than a million persons gainfully employed in chemicals and related products—a record high. Demand will continue to be great: the National Science Foundation reports that graduate enrollment in science and engineering declined this past academic year, one cause being the expiration of G.I. Bill benefits.

Employers report that they are actively seeking women and minority scientific workers. It's about time, you might say, but there's not much hope of finding them. Blacks, for example, make up 10.7 percent of the university population but only 4.7 percent of physical science undergraduates. Only 20 of 3,166 males achieving doctorates in the physical sciences between 1973 and 1976 were black—fewer than one percent. Fewer than three percent of the women receiving science PhDs were black.

Below the college level, the situation

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appears even worse. The National Assessment of Educational Progress reports that the decline in science achievement continues among elementary, junior high and high school students. Among the two younger groups, where funding for science education has been most curtailed, the decline is paradoxically leveling off (perhaps this is because the 9- and 13-year-olds are now reaching the lowest level of scientific literacy possible in a society so immersed in technology).

Who needs a man around the house?

For some feminists, the ultimate in women's liberation implies doing without males entirely. Such conditions exist among the "lower orders." The trick is virgin birth, which Dr. Ursula Mittwoch of University College, London, says in *New Scientist* (Vol. 78, No. 1107) has been "thought to be the prerogative of certain outstanding individuals."

It seems that there are at least 25 species of lizards in which there are no males at all, or in which they are absent in some local populations. By no means do these represent some form of reptilian Shakerism, doomed to extinction in one generation. They just have the genetic capacity to produce young (females only, please) by virtue of unfertilized eggs.

For instance, take the whiptail lizards, some species of which are totally female. The vast majority of whiptails that are all-female seem to have resulted from a natural hybridizing of two other lizard species. Hybrids, like mules, are generally sterile. But the all-female whiptails seem to have the capacity—or at least their eggs do—to go through two, rather than one, rounds of chromosome duplication, resulting in pairs of chromosomes just like the mother's: the process —called parthenogenesis—then takes over and a female is born.

Scientists, it should be pointed out, have yet to find any cases of parthenogenesis as a normal means of reproduction in animals further up the scale of evolution than reptiles, though they've been fooling around with mice and such —unsuccessfully—in their laboratories. For humans, it remains firmly in the realm of miracle. Thus, while feminists might well put the whiptails on their banners, men can rejoice, as Dr. Mittwoch apparently does, that they will not any time soon become "redundant."

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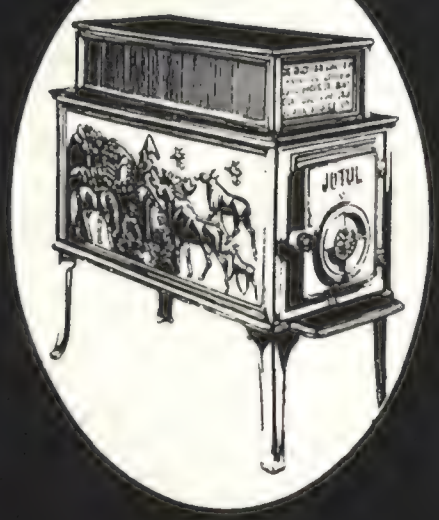

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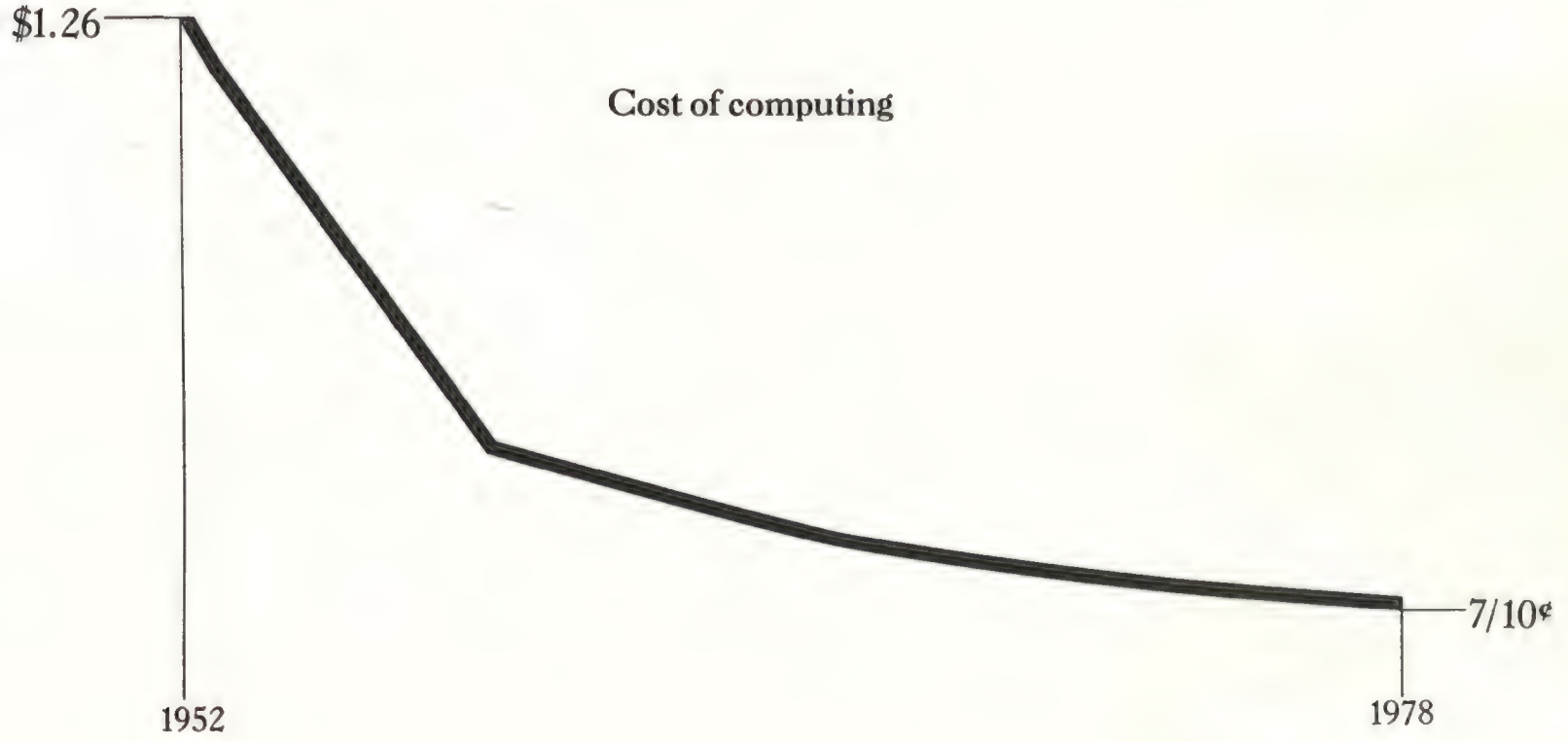

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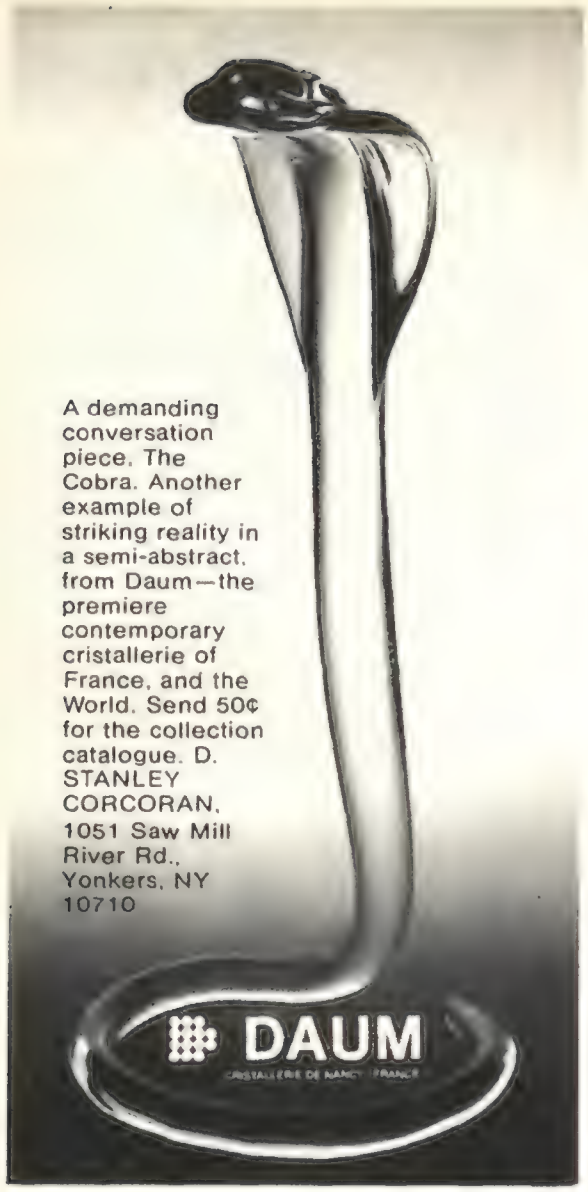

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Gone but not forgotten

A favorite whodunit among many scientists is the relatively sudden disappearance, the "mass extinction," of the dinosaurs. There are almost as many theories to explain this calamity as there were dinosaur species, and the latest is to be found in *Science* (Vol. 201, No. 4354), the work of Dewey M. McLean of the Virginia Polytechnic Institute and State University in Blacksburg.

It goes like this: shallow seas recede from the continents, resulting in a reduction of marine algae. Carbon dioxide, which marine algae consume a lot of, builds up in the atmosphere, causing a warming effect. The seas warm up and lose yet more carbon dioxide to the atmosphere, in turn causing still more warming. Excess heat is bad for reproduction—specifically for sperm—and the effect on dinosaurs (which, being so big, didn't lose heat very easily) would have been a worldwide birth-control program of staggering efficiency. The abundant complete but unhatched dinosaur eggs found in the fossil record may have been unfertilized, McLean suggests.

It all happened rather fast and, McLean observes, it could happen again. Fossil fuels are being burned at alarming rates. Carbon dioxide is building up in the atmosphere. A rapid temperature increase of ten degrees F over the next century or two would, he feels, outpace the ability of many organisms to adapt to it, thereby triggering new waves of worldwide extinctions.

Friends of the flowers

Long gone they may be, but dinosaurs have nevertheless come in for a lot of good press lately. There is a suggestion abroad that they may have given rise to the birds, and it is pleasant to think that the young parrot on my shoulder watching inquisitively as I write is descended directly from so majestic a lineage. To have bequeathed us birds is nice enough, but now it seems dinosaurs may also have helped give us flowers, too.

The first flowering plants—scientists call them angiosperms—started slowly and gradually as shrubs in mid-Cretaceous times (about 110 million years ago). On the average, flowering plants, with their compressed life cycles, grow and colonize bare ground more rapidly than conifers

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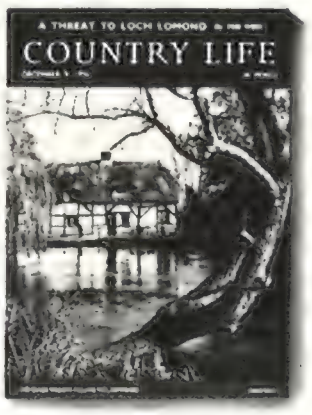

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and ferns, which is why flowering plants dominate the landscape today. Darwin, along with many other classical naturalists, was unable to explain how these adaptations first evolved, and called angiosperm origins an "abominable mystery." Now Robert T. Bakker, associate professor of geology at the Johns Hopkins University (and a research associate at the Smithsonian) reports in *Nature* (Vol. 274, No. 5672) that the emergence of angiosperms was probably caused by a change in the browsing habits of the dinosaurs.

In late Jurassic times (140 million years ago) the dominant forms of dinosaurs were sauropods and stegosaurs—high browsers, many of which could sit up on hind legs and tail and crop branches and cones from the tops of conifers, rarely killing the plants. But then, as the Jurassic edged into the Cretaceous, the sauropods and stegosaurs became extinct or much reduced in numbers. They were quickly replaced by big ornithischian dinosaurs whose physiques made browsing on low-growing plants a necessity. All the low browsing would have "thinned out the forest structure, and would have favored shrubs" which could quickly regenerate limbs and foliage to keep pace with the herbivores and which, by reproducing quickly, could rapidly recolonize bare areas.

Angiosperms appeared about five or ten million years after the ornithischians showed up—apparently first as shrubs and low trees that would have an advantage over conifers in areas of low cropping. And as the number of angiosperm types increased, so did the number of ornithischian types—an attractive bit of co-evolution.

—James K. Page Jr.

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"High-browsing" sauropods feed on tall conifers in a semiarid North America some 140 million years ago.

IN A BMW, THE DRIVER IS NOT ASKED TO COMPENSATE FOR THE SHORTCOMINGS OF THE AUTOMOBILE.

The extraordinary road-holding ability of the BMW 320i is graphically illustrated, above, travelling at a high speed through turn # 6 at the Sears Point International race course. Note: as the BMW goes into the turn, the unique angling of the MacPherson front struts reduces the lean of the inside front wheel, while the outside front wheel remains vertical; inside and outside rear wheels remain vertical due to semi-trailing arm design in the rear.

Like all honeymoons, the first few months of new car ownership are generally a period of adjustment.

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All told, the only major adjustment you will have to make as the new owner of a BMW 320i is that you will have no adjustments to make at all.

If the thought of owning such a car intrigues you, call us anytime, toll-free, at 800-243-6000 (Conn. 1-800-882-6500) and we'll arrange a thorough test drive for you at your convenience.

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LIGHT UP HER LIFE--
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Perfect for Anniversaries—Ideal for Birthdays—and Extraordinary as a gift for the upcoming Holiday Season

You are part of America's "Third Century" society – so is she. It is the beginning of a New Era – a fresh start. An Era with its own new symbols.

Such a symbol was created when America's Third Century officially began, back on April 18, 1975. Our former President, Gerald R. Ford, officially marked the start of America's third 100 years as a nation, in a solemn ceremony held at Boston's famous Old North Church. Perhaps you saw this ceremony on network TV and you saw the President light the "Third Lantern for America's Third Century." Perhaps you even recall the wonderful spirit that prevailed at the time.

The Lantern used in the ceremony was an authentic Sterling Silver full-size re-creation of the one remaining lantern of the two famous signal lanterns used back in 1775, when Paul Revere made his famous ride. The relic of the original, an outstanding example of 18th Century Colonial craftsmanship, is on display at the Concord Antiquarian Society Museum in Massachusetts. It is seen and admired by many thousands of visitors every year.

The ceremonial lantern is an impeccably accurate, detailed copy of this very historic artifact, so highly cherished by the Museum. When the Limited Editions Collectors Society was selected to make the re-creation, our artisans went to the Museum where they made finite drawings, detailed photos, and wax impressions of the original. The re-creation *had to be perfect.* After all, the Paul Revere-Old North Church Lantern is such an important national symbol – it marked a most critical moment in our nation's struggle for Independence. It's warning glow flashed from the Steeple of the Old North Church and played a vital role in altering forever the course of history. It is the "light" that gave birth to our nation.

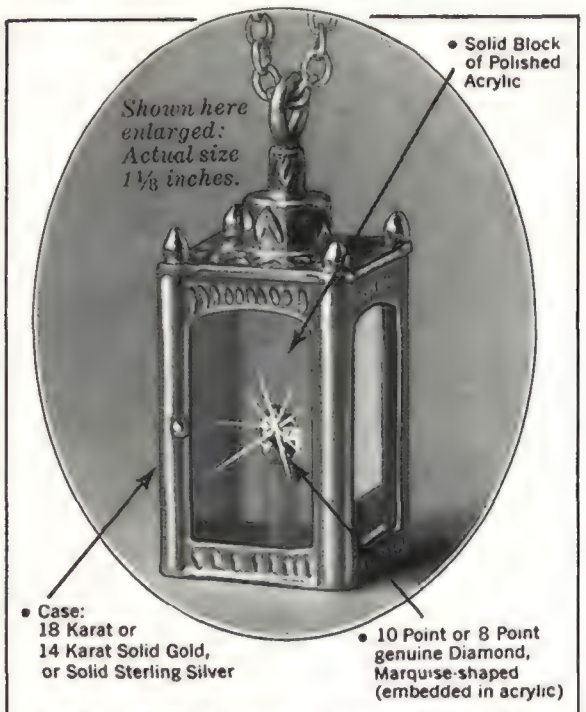
Since that memorable Anniversary ceremony took place, the Society has issued a number of similar full-size re-creations of the famous lantern, as official commemoratives. A portion of the proceeds from the sale of each large lantern goes into a special maintenance fund at Boston's Old North Church. They have been offered in Registered and Limited Editions and crafted in copper, brass, and antiqued or polished pewter finishes, plus a very limited number in Sterling Silver. These have been and are still being purchased as important collectors pieces, by Americans everywhere.

A UNIQUE LIMITED EDITION, NOT AVAILABLE IN STORES

Because of the response to our offer of the full-size reproductions, we introduced (earlier this year) a Limited Edition of a new, beautifully-crafted "miniature" of the famous artifact – in the form of an exquisite piece of jewelry – our *Third Century Lantern Pendant* – an extraordinary gift item. It was cast using 18 Karat Solid *Gold* and utilized a 12 Point Diamond. Shortly after our first advertisement appeared, there was a large increase in the cost of rough diamonds announced by DeBeers. The price of the Pendants had to be increased approximately 25%. Nevertheless, within ninety days, the entire Limited Edition of 500 units was sold out!

The molds and tools used for making that particular Diamond Pendant have now been destroyed, and the Limited Edition is closed. However, because of the many requests we have had for this unique jewelry item, we have designed a smaller more delicate version of this unusual Pendant, especially appropriate for this season's new fashions.

We offer you an opportunity to be among the first to obtain this new Limited Edition piece. It too is exquisite, and it makes a wonderful gift for birthdays, anniversaries, plus other important occasions, and is especially appropriate for the upcoming season of Holiday gift giving. Wearing this Pendant subtly demonstrates pride in America's past and confidence in its future, all as our nation embarks on its Third Century. The Pendant makes a unique, charming, and thoughtful gift, one of the finest and most meaningful that you can ever give. What pleases a woman more than a gift of Gold or Silver and Diamonds? She'll be enchanted when she first sees it and delighted as she displays her Third Century Lantern Pendant. It's a great conversation piece.


Shown here enlarged: Actual size 1⅛ inches.
• Solid Block of Polished Acrylic
• Case: 18 Karat or 14 Karat Solid Gold, or Solid Sterling Silver
• 10 Point or 8 Point genuine Diamond, Marquise-shaped (embedded in acrylic)

A detailed re-creation of the historic Paul Revere - Old North Church Lantern — the famous "light" that gave birth to America — crafted in the form of a magnificent Diamond Pendant — with its gemstone encompassed in 18 Karat or 14 Karat Solid Gold or Sterling Silver.

INDIVIDUALLY HAND-CRAFTED

Similar in styling to the original, larger Pendant, this new smaller *Lantern Pendant* also comes in several types of precious metals. The new Limited Edition version is offered in 18 Karat Gold with a delicately worked candle and flame, permanently embedded in a block of crystal-clear, polished acrylic. The flame itself, is a stunning 10 point Marquise-shaped diamond! A dazzling gem-stone which perfectly symbolizes the warning "light" on that fateful night in 1775. To assure their rarity, this new Edition is being tightly restricted to just 1,250 pieces – or just 25 for each of America's 50 states.

The Pendant is sturdy and solidly constructed, yet very comfortable to wear. The Diamond, permanently locked into the acrylic block, cannot be lost, and it will keep its lustrous sparkle forever.

A Registered Edition is also available — in 14 Karat Solid *Gold* or Solid Sterling Silver with an 8 point diamond flame. When the Limited Edition is sold out, however, the dies and molds will be destroyed and both Editions will be closed, forever.

The Registered Edition can also be purchased — at a much lower cost — with a satin yellow crystal flame instead of the diamond flame. In fact, you can own this remarkable Pendant for as little as $95.

Each Pendant, in both Editions, is individually hand-crafted and cast by skilled goldsmiths and silversmiths. Each is hand-assembled and polished with the utmost, meticulous care. Twenty-three separate, hand operations are required to assemble each Pendant prior to final inspection by the Master Goldsmith. Every Pendant comes with either a 12 Karat Goldfilled or Sterling Silver chain, 24 inches long, which can be easily adjusted for casual or dress wear.

The Third Century Lantern Pendant is an extremely outstanding jewelry value. A diamond ring using a similar size and quality of diamond, plus the same weight content of gold or silver, would cost considerably more. You can go to any jewelry store and purchase a variety of mass-produced pendants using similar materials. You will find that most will cost more — and some much more — than the Third Century Lantern Pendant. However, none will have our Pendant's unusual combination of handcraftsmanship, rare beauty, unique design, historical significance and value.

To subscribe to this offer, just fill out and mail the coupon below — or better still — call us, toll free, at the number shown in the coupon. And, of course, you may charge your purchase by using one of the major credit cards.

UNCONDITIONAL GUARANTEE

Guarantee? We invite you to examine this remarkable Pendant value without any obligation whatsoever. Look it over. If you are not completely satisfied when it arrives, send it back for a full refund (we'll also reimburse you for whatever it costs you for postage and insurance to return it). Or, even after you have given it to that special person, if you find that she is not totally pleased, we'll buy it back. In fact, due to the very limited availability of these Pendants, we'll be glad to repurchase yours anytime within one year from the date of your order. After all, in the long run, we don't expect Gold, Silver or Diamonds to lose their value — they never have.

There is another advantage to the extended, one-year guarantee. You may acquire the Pendant *now — before the Editions are closed,* and still present it as a gift at a later date — as late as Christmas, or even next Valentines Day in February of 1979 or Mother's Day of 1979.

There is a simple explanation for this outstanding Pendant value. The Limited Editions Collectors Society makes all of its exclusive offerings *directly to the public.* Its products are not distributed through retail stores, catalog houses, or mail marketing firms, who must add "markup" to the items they purchase for resale.

The Collectors Society is a private organization founded by a group of avid collectors, art lovers and historians, including some who have distinguished themselves in the fields of Arts and Letters. Since its founding in 1972, the Society has received a number of important awards for excellence. In addition to creating the official Old North Church commemorative Lantern, used by former President Ford, the Society has been commissioned by numerous other well-known, non-profit organizations to create, and offer for sale, their official commemoratives. Included, among others, are offers sponsored or endorsed by The Winston Churchill Foundation, The ARBA, an agency of the U.S. Federal Government, The Council of the Original Thirteen States, the United States Capitol Historical Society and The Freedoms Foundation at Valley Forge.

The Third Century Lantern Pendant. It truly is a captivating piece of jewelry and a gift sure to be treasured always. It is not available in stores, nor will we accept orders from stores wanting to purchase these Pendants for resale. As with the full-size Lantern reproduction, and the larger Pendant offered earlier this year, part of the proceeds from the sale of each of these new Pendants accrues to the benefit of a special Maintenance Fund at Boston's Old North Church.

To avoid possible disappointment or needless delay, we recommend that you mail your completed order coupon just as soon as possible, before the small Limited Edition is completely sold. To make *sure* a Pendant is held in reserve for you and to ensure even speedier delivery, we urge you to call our Mail Order Service Center, toll free, 800-225-5252, in advance of mailing your order.

PROMPT ACTION RECOMMENDED

Because of the overwhelming response we encountered when we offered our larger Lantern Pendant (sold out within 90 days), we do not expect this new Limited Edition to be available for very long. Furthermore, because of the instability of the prices of Sterling Silver, 14 Karat and 18 Karat Gold and Diamonds, we cannot guarantee these prices for any longer than thirty days beyond the date of this publication.

If you wish to purchase the Pendants for gift-giving, send us a separate note with names and addresses, and we will gladly giftwrap them and ship them anywhere — with a gift card from you.

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BROTHER TIMOTHY'S NAPA VALLEY NOTEBOOK

How long should a red wine age?

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Each of our Napa Valley red wines is allowed to develop at its own leisurely pace, for time alone fulfills the promise of the grape. We follow their progress, tasting for the development of varietal character, softness, and depth of bouquet. Only when we are satisfied that the wine has matured and is ready to drink do we approve it for shipping. Yet, the nature of many of our red wines is such that they will continue to improve for several more years, gaining even greater depth and varietal complexity, if they are stored properly in your own home.

the Christian Brothers NAPA VALLEY CABERNET SAUVIGNON

Our Napa Valley **Cabernet Sauvignon** is made with the grape many consider to be the finest red of the Napa Valley. Our bottling is dry, with a deep taste and distinctive bouquet that is delightful now, and will continue to expand. Enjoy it with steaks and roasts.

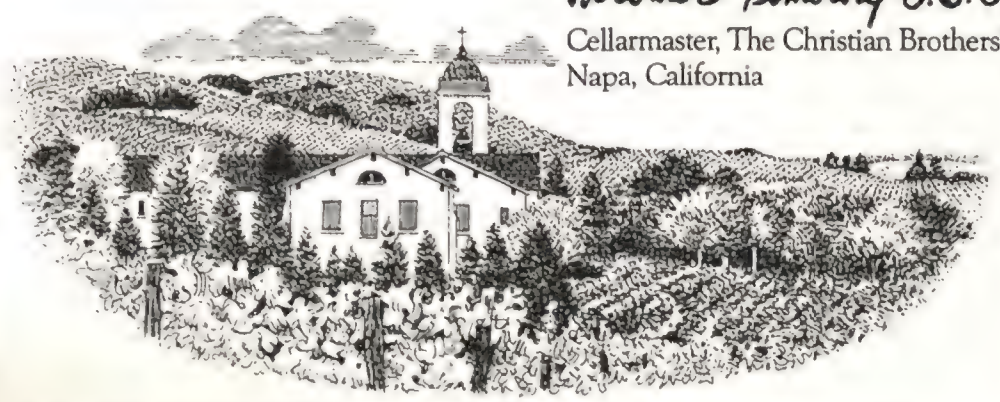
the Christian Brothers NAPA VALLEY GAMAY NOIR

The Christian Brothers **Gamay Noir** comes from the grape often called "Gamay Noir a Jus Blanc" in France. Here in the Napa Valley vineyards, it has gained new character. Our wine is mellow with an almost velvety softness before it is shipped but it has the ability to develop even further. This is a fine choice with red meats, game, cheese dishes or pasta.

We think you will be pleased by the mature taste of our wines when you buy them. But if you have a cool, dry place to store them so the wine touches the cork, we invite you to enjoy the rewards that can come with extra time in the bottle.

Brother Timothy F.S.C.

Cellarmaster, The Christian Brothers®
Napa, California



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Around the Mall and beyond

Smokey Bear has a new home—a fine, comfy fieldstone rambler with a burglar-proof door that opens onto a sunny patio and a swimming pool. When it was to be dedicated, I hurried right over to the National Zoo. The new Smokey is not yet as large as his predecessor, dead these two years. But he's big enough so that when you're invited to his housewarming, you go.

It was a warm morning, and the little ceremony turned out to be a media affair, as we publicists say. There were newspaper reporters and photographers,

The Bunker chairs—even Archie's sacred seat—from TV's *All in the Family* now reside in the Museum of History and Technology. The capacity presentation audience saw (from

television cameramen and audio people and magazine writers, as well as dignitaries, zoo attendants, assorted children eating runny things and wearing red patches that said "I think I love you, Smokey Bear," their mothers, a handful of friendly cops and a confused gentleman, bleary of eye, seedy of garb and strong of breath, who didn't know how he got there, but was thankful the bear was real. In the background, over at the Big Cat estate on the hill, a lion seemed to be noisily complaining that he hadn't been invited.

Zoo Director Ted Reed spoke, and Smithsonian Assistant Secretary for Science David Challinor spoke, and Forest Service Chief John McGuire spoke and presented a plaque to Smokey Bear's devoted keepers, who discussed quietly among themselves whether they should hang it in Smokey's house, and the lion roared. Master of ceremonies was Jackson Weaver, a Washington radio personality, who provided the voice for Smokey in those ads where he reminds you to watch it with matches in the woods.

Weaver is a man with the gift of many tongues. He can sound like a constantly bewildered lady, a bombastic Senator, a dirty old man or just himself, with a variety of foreign accents thrown in as

left) Rob Reiner ("Meathead"), Sally Struthers (the Bunkers' daughter), creator Norman Lear and Jean Stapleton (Edith). Star Carroll O'Connor (Archie) was at home, ill.

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Smokey prowls his patio.

needed. He said that his first Smokey voice was sort of fierce and growly. Then later he thought better of it and redid Smokey with a kindlier tone: "Only *you* can prevent forest fires!"

Rudy Wendelin, the artist who has kept Smokey in a ranger's hat and dungarees for more than 30 years, was standing quietly with the onlookers at the housewarming—at least he was a lot quieter than that lion. What with Weaver and Wendelin, the Smokey idea has worked wonders. It started in 1945, after some bad fires had finally got everyone worried. The first Smokey was found in the cinders of a New Mexico forest fire in 1950—a singed and miserable little cub. Rangers adopted him and shipped him off to the National Zoo to become a *living* Smokey. In November 1976, he died, at the grand age of 26.

The new Smokey did not assume his position by either heredity or franchise. Dr. Challinor told me that, in the best Washington tradition, young Smokey was appointed to this post. He's only nine—sort of a teen-ager—and it occurs to me that Mr. Weaver may want to redo his voice to sound as though it were just changing. But public life matures people, so why not bears?

Even at his housewarming, Smokey

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*1.4 litre MCA-Jet engine. 4x2 manual transmission.
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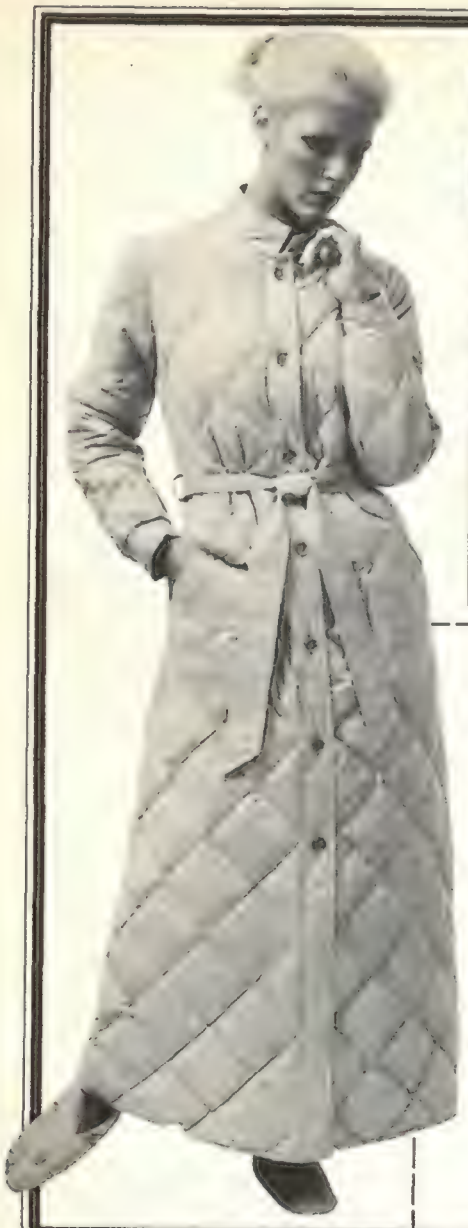
†Your mileage may vary depending on your driving habits, the condition of your car, and its equipment. California estimates are lower.



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was learning to cope with his job. You see, he really didn't want to take part when the time came. His keepers had to talk him into it, urging him out onto his patio and closing his door behind him. And then he sat down, leaning against the door and looking back into his house over his shoulder. While people were applauding him and cheering the fact that unnecessary forest fires have been cut in half thanks to the Smokey campaign, he was wistfully wanting to get back inside where he could play with his things: his ranger's hat, his raggedy old "teddy man."

Naomi Uemura, the Japanese explorer who got to the North Pole, alone, by dogsled, and then traversed the length of Greenland, over the ice cap, the same way, has had much less pleasant experiences with another kind of bear. Twice, polar bears interrupted his solitary journey searching for food. They wanted dog food, human food, dog or human—it didn't matter. It mattered a lot to Uemura. In a press conference that he held at the Smithsonian after his return, the explorer returned several times to the tale of how it feels to have a bear burst through your tent and sniff you over in order to see where to begin on you. It made a most understandable impression on the young man.

The Smithsonian's part in all this was to arrange for the radio-tracking signals that were automatically transmitted from Uemura's sled to a satellite and bounced back to the Goddard Space Flight Center, outside Washington.

Uemura was supplied by air—sometimes by airdrops. I realize that a radio signal beamed to a satellite could pinpoint his position, but I was interested in how an airplane pilot could, flying over an endlessly white sheet of ice. So I talked to the pilot, Patrick Doyle, from Resolute Bay, Northwest Territories.

Doyle said he had a radio direction-finding needle to follow most of the way, then when he got relatively close, Uemura's dogs would turn their heads toward the plane, although it was still too far off for the man to hear. Once the dogs turned in one direction and made it obvious that they were getting a "reading," Uemura would call Doyle on his portable radio and say, "Turn to your left," or whatever. Pretty soon Uemura would hear the plane, too.

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Nice and understandable, that, in these computerized, satellite-signaling times.

Exactly six years ago, in our issue for November 1972, we carried a very short pictorial article about an imaginative and charming porcelain chess set which was produced by Cybis of Trenton, New Jersey. The little figurines, all in medieval garb, have sort of winsome expressions, with wide and innocent eyes. Upper social strata—king, queen, bishop—are seated on carved stools. A lady's head gazes out of a window in a rook, while a page's head peeks around a battlement (though there's certainly not

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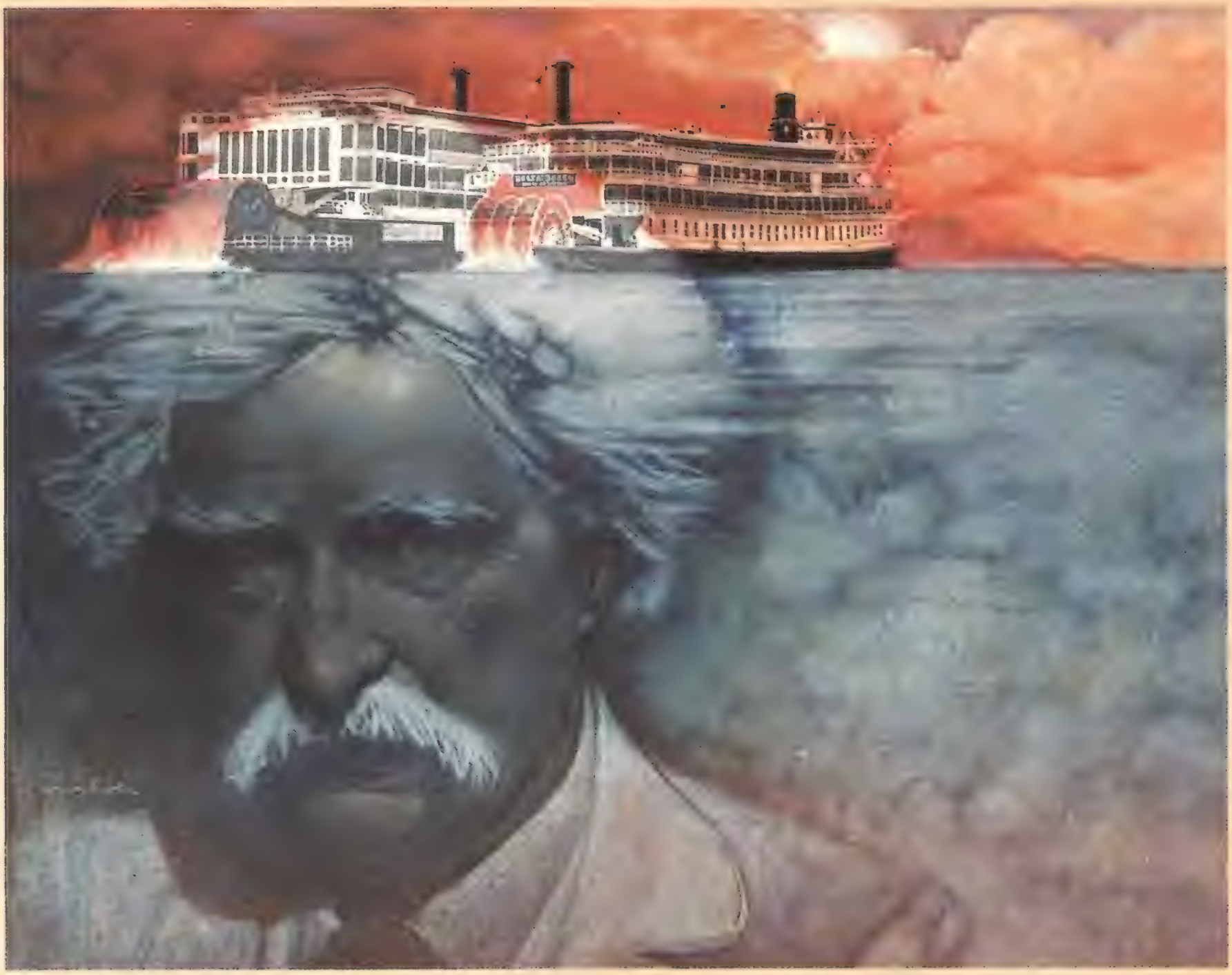

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room for the rest of them). The knight is mounted on a horse, and the pawns stand on their own two feet.

Our story was that this remarkable chess set was the gift of the United States to the Soviet Union during the 1972 summit conference. And now the Smithsonian owns the duplicate set, donated by the manufacturer to the Museum of History and Technology. It is on display in the Ceramics Hall at the Museum of History and Technology.

The second yacht race for the James Smithson Challenge Cup ("Around the Mall and beyond," November 1977) took place toward the end of summer and featured the same two courtly sea captains as before, Sir Porter Kier, director of the Museum of Natural History, and Gentleman Ben Lawless, assistant director for exhibits at the Museum of History and Technology.

This time the two gracious yachtsmen raced with radio-controlled model skipjacks—identical except that Sir Porter's *Geneva May* cleaned up. That makes it two in a row for this generous-hearted skipper, a paragon of sportsmanship.

I asked the two for post-race comments, and as before the replies stunned me with their old-world mannerliness. "A clear example of overwhelming superiority," Sir Porter mildly suggested, burnishing the brass buttons of his yachting jacket. "Some people can sail a model skipjack; some can't."

Fumbling with my notes, I asked Sir Porter what the name of Gentleman Ben's yacht was. "I couldn't care less," he answered with a shrug. "Would you believe, *Beaten*?"

Gentleman Ben Lawless, known in yacht club circles as the Little Commodore, was honing the point of a sailor's marlinespike when I called upon him. "Explanation?" he roared, looking up at me with inflamed eyeballs. "The swab packed the shoreline with relatives, and they managed to jam my radio transmission. You take that kind of malfeasance and combine it with blatant cheating, and there you are! Poor little *Champion Girl*! Never had a chance!"

"Champion Girl?" I repeated, quickly making a new notation.

"Ex-Champion Girl," he muttered as he slammed out of the cabin and headed for the afterdeck.

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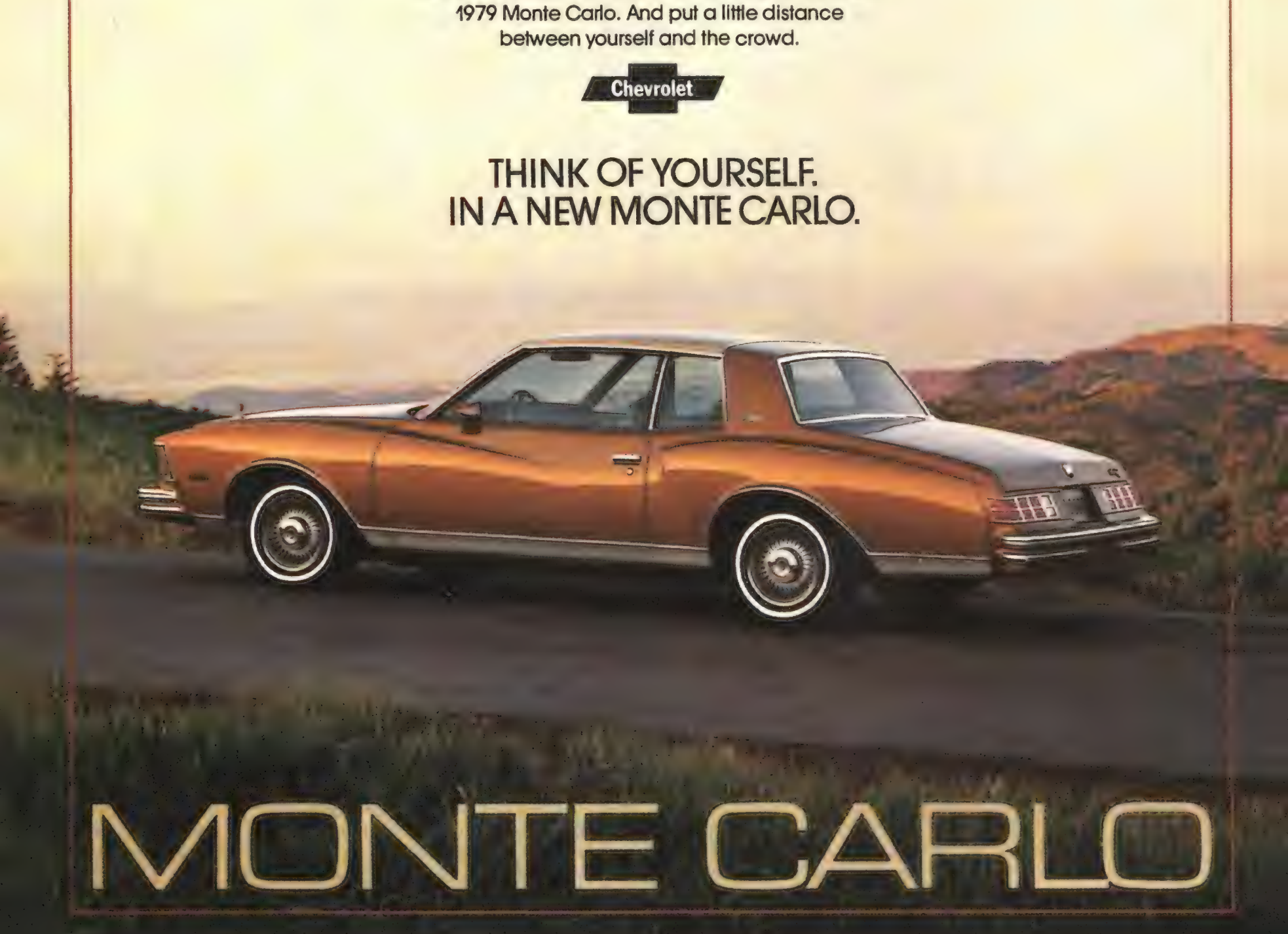

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By Maya Pines

Modern bioengineers reinvent human anatomy with spare parts

Laboratories use space-age technology to produce a new generation of artificial organs and synthetic body tissues

A 19th-century English humorist, Jerome K. Jerome (*Three Men in a Boat*), once opened a medical tome and discovered, he said, that he had every ailment in the book except for housemaid's knee. By the 21st century, a man in Jerome's shoes may be able to order a replacement for almost every ailing part of his body, including the knee. That is the promise of a revolution which had its beginnings 40 years ago.

When Dr. Willem Kolff began practicing medicine in the 1930s, his first patient died of kidney failure. There was nothing the young Dutch physician could do to save the boy. His helplessness, and the family's grief, set him off on a quest that revolutionized medical practice. If he had only been able to remove some of the wastes that had accumulated in his patient's blood, he reasoned, this young man might have survived and led a normal life.

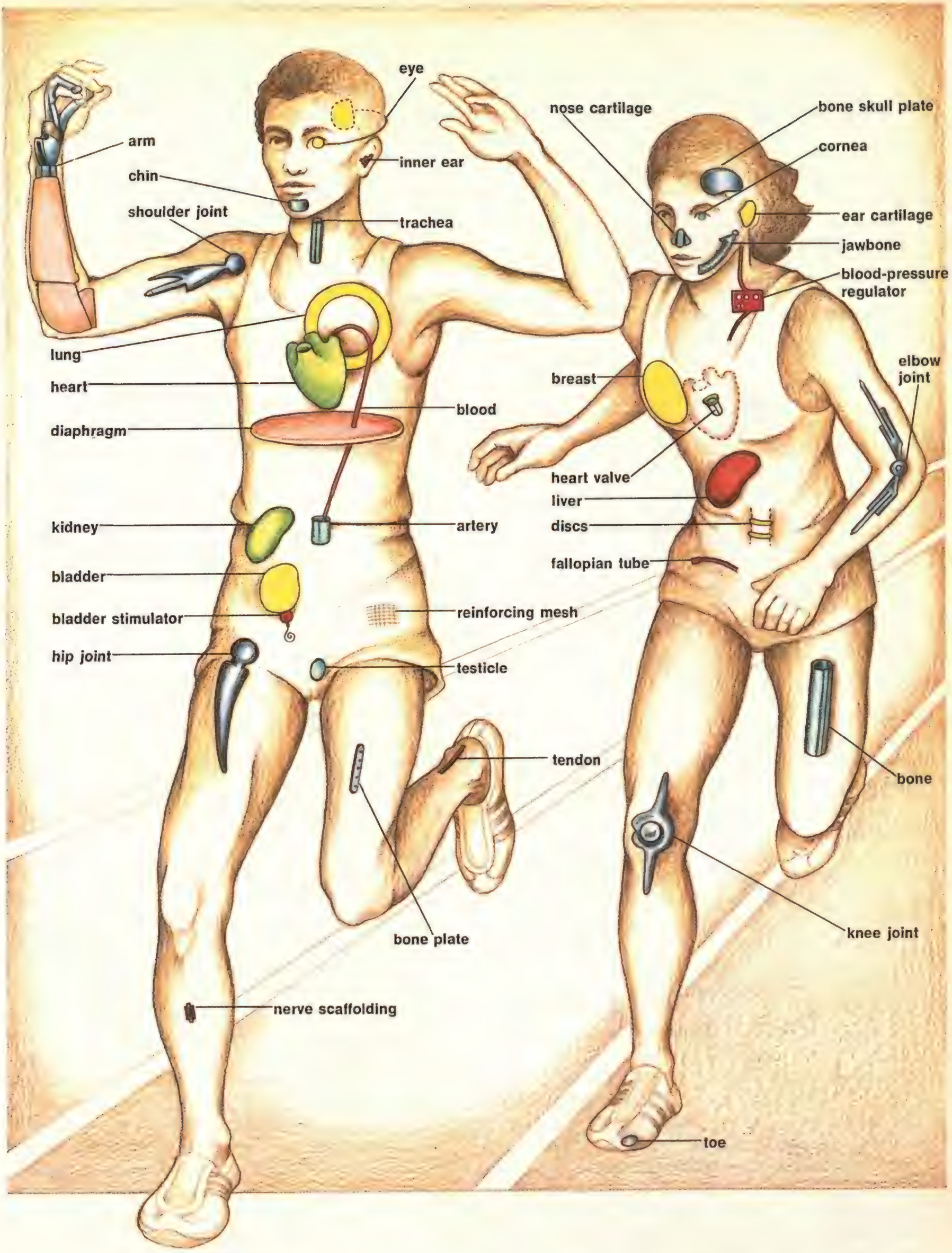
So Kolff began a stubborn search for a material that would contain blood, yet let impurities seep through. He hit on an unlikely one: sausage casings made of thin cellophane, which was then a new material. When these casings were submerged in salt solution, they became porous to many chemicals, but not to blood. Eventually Kolff built a Rube-Goldberglike device of cellophane tubes wrapped around a drum which he partially immersed in saline solution, and ran a patient's blood through the tubes to purify it, a technique known as dialysis. Only the weakest and most desperately ill patients were entrusted to this device at first, and 14 patients died. But Kolff continued to modify the technique and patients began to respond. The 17th patient, a woman, lived for many years with the help of Kolff's machine—the first artificial kidney.

Its success marked the birth of modern bioengineering, an extraordinary field applying engineering principles to biology and medicine. Since 1943, when Kolff's artificial kidney made its debut in Holland, kidney dialysis has saved the lives of hundreds of thousands of people around the world. Some 40,000 Americans are alive today because of it. The artificial kidney was followed by the heart-lung machine (in which Kolff also had a hand). Soon afterward, bioengineering began to produce a cornucopia of spare parts: cardiac pacemakers, patches, valves and bypass units, intra-aortic balloon pumps, artificial arteries, artificial joints and sophisticated artificial limbs. It has also produced experimental models of artificial lungs, eyes, ears, livers, pancreases and hearts.

So splendid are these achievements that bioengineering has become the victim of its own success. Rapid progress in space technology, the advent of miniaturized electronic devices, and a heady supply of research funds, have inspired unrealistic expectations about artificial organs and limbs—as seen in TV shows about a "six-million-dollar man" and a "bionic woman" whose man-made parts give them superhuman powers.

Yet, just as some critics are focusing on the limitations of existing medical technology—and its cost—the pioneers of bioengineering see their field on the verge of a new flowering. The future they envision includes a whole new family of instruments to monitor body chemistry, computer systems to provide instant medical diagnosis and perhaps even treatment, synthetic materials tailor-made for use inside the body, and new tools for research into the mysteries of such diseases as atherosclerosis, cancer and schizophrenia.

There is promising work all over the country, in countless laboratories. At the University of Southern California, for example, a medical research team has developed tiny glucose sensors that can be implanted into the body tissues of diabetic dogs to watch for excessive concentrations of sugar; whenever the level of sugar approaches a danger point, the sensor switches



Artificial devices from the drawing boards of bioengineers offer head-to-toe replacements for an array of malfunctioning body parts. Many are in prototype stage, being tested on laboratory animals.

Illustrations by Patricia Wynne

Wearable Artificial Kidney weighs only eight pounds, is easily carried, and could be used almost anywhere.

on a miniature pump (implanted in the dog's peritoneal cavity) which "secretes" insulin in appropriate quantities. Taking a different tack, researchers in New England are relying on living cultured cells rather than on hardware to deal with the same problem. After removing some insulin-producing cells from pancreases of normal newborn rats, they culture the cells on the outside of synthetic capillaries. Dozens of these cell-coated capillaries, in cigar-sized units, are then connected to the blood vessels of diabetic laboratory animals. As the animal's blood circulates through the capillaries, the cultured cells release insulin as needed. In time, both methods may be tried on human beings for the treatment of diabetes.

Patients who suffer from emphysema or other chronic lung diseases may someday benefit from implantable "booster lungs" which will do part of their breathing for them, if experiments now underway at Brown University prove successful. Prototypes of such booster lungs, made of spongy Teflon, will soon be implanted in sheep, says Dr. Pierre M. Galletti, a professor of medical science at Brown, and past president of the American Society for Artificial Internal Organs.

Elsewhere various laboratories are developing "noninvasive" imaging techniques, based on X-ray scans or ultrasound probes and computers, that will allow doctors to diagnose a variety of ills without resorting to painful tests or exploratory surgery. Other labs are working on ways to receive and monitor information from electrodes which are placed over the brains, eyes, muscles or hearts of ambulatory patients who may be miles away.

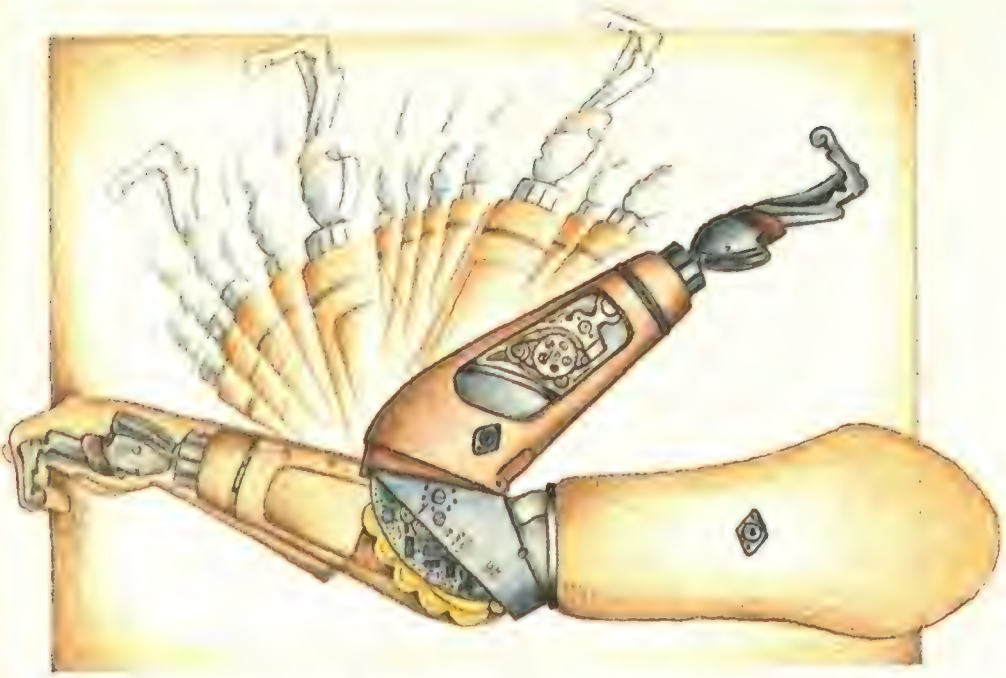
Dr. Kolff himself has attracted an energetic and talented group of researchers to the University of Utah, which he joined in 1967. As a result, some of the most exciting work in bioengineering is now taking place in Salt Lake City, where surgeons, mathematicians, physiologists, mechanical engineers, metallurgists, electrical engineers, anesthesiologists, chemists, computer scientists, veterinarians and hematologists form a sort of critical mass in which the solution of one problem helps to deal with another, and a variety of projects are about to pay off.

There is, for example, the Wearable Artificial Kidney, or WAK—a device that could make the lives of thousands of kidney patients more bearable because it would allow many patients to treat themselves comfortably and more cheaply at home, rather than in hospitals or other institutions. At present, people who undergo dialysis must generally lie down and stay connected to a bulky machine for five hours three times a week—a thoroughly demoralizing and fatiguing experience. However, with the help of a WAK, which packs in a suitcase and weighs only eight pounds, one patient was able to travel to California recently and work at his desk even during the treatments. He was also free to disconnect himself from the 20-liter tank that contained the blood-cleansing fluid for as much as 15 minutes at a time during the treatment, to open the door or do anything else he liked.

The WAK was designed by Dr. Stephen Jacobsen, an associate professor of mechanical engineering who also runs the university's large Projects and Design Laboratory, where all the parts and supplies for the WAK were made. The lab is also developing a small, implantable access device which could make peritoneal lavage—dialysis within the abdomen—convenient and practical for a large percentage of patients.

Like many of the Utah bioengineers, Dr. Jacobsen is a dynamic man who tackles several different problems at once. Besides working on kidney devices, he has been designing a revolutionary artificial arm which amputees will be able to move just by thinking about it. In an office lined with medical antiques—such as an 1866 artificial hand made of leather and metal, with a hook and attached fork and spoon—Jacobsen de-

Maya Pines, a widely known writer on science and medicine, contributed the article on predictive medicine in SMITHSONIAN*'s July 1976 issue.*



Artificial arm uses electric motors controlled by muscle signals to achieve range of natural movement.

scribed the plight of thousands of persons who have lost an arm above the elbow: in many cases they wear artificial limbs which serve little more than a cosmetic purpose (and which are often discarded by people who have use of the other arm), since anything more functional is disturbingly noisy, heavy, awkward and difficult to operate. So Jacobsen tried something new. Instead of relying on gear trains, screws and pulleys, he designed an artificial muscle made of flexible plastic fibers that works much like the real thing. This, he believes, can provide graceful motion. Then he studied the exact role of 30 separate muscles which are involved in arm motion, to identify those which could be used to control an artificial arm. He made a map of the electrical signals from the muscles in the amputee's shoulder and remnant limb, which can be picked up by electrodes embedded in the artificial arm's socket. Finally Jacobsen and his colleagues designed an "anthropomorphic hook," with forefinger and thumb, to serve as an artificial hand. The arm can grasp objects delicately, lift four pounds actively and withstand static loads of up to 50 pounds. For cosmetic reasons, the team added a lifelike plastic glove, complete with finger creases and nails, which can be slipped over the hook to look like a real hand.

An amputee who receives a "Utah arm" will not have to learn complex rules of operation, as he would with other kinds of full-arm prostheses. He will simply think of moving his elbow or hand, and a microcomputer which processes signals from his shoulder muscles will deliver the right amount of energy to appropriate motors in appropriate parts of the arm. So far the arm has been used only in Jacobsen's lab, but preliminary models (limited to elbow flexion) will soon be tried out by amputees under normal conditions, to be followed by models that allow full and graceful motion of the entire arm, the elbow, the wrist and the hand.

Meanwhile, in another part of the University, many of the functions of a hospital chemistry lab are being designed into a tiny, implantable chip. This is the "superprobe," only one millimeter wide, a powerful sensor relying on microscopic integrated circuits, which could be inserted into a patient's arm to give continuous reading on the vital chemicals in his blood —without withdrawing a drop. The superprobe has proved remarkably sensitive to concentrations of hydrogen, potassium and calcium ions. It is hoped that in the future it will be able to monitor other vital chemicals in the blood, as well as antibodies and enzyme substrates—and it is bound to produce some radical changes in medical care.

For example, patients who are in intensive care today must have blood drawn repeatedly for tests; the blood is then carried to the hospital's lab for analysis—possibly undergoing subtle changes in transit—and a few hours later, at best, the relevant information is given to the doctor. Meanwhile the patient's condition may have changed.

Stanley Moss, an electronics engineer who has done pioneering work on the superprobe, foresees a time when it will be used together with computers to control the injection of various types of ions into patients' blood, in order to maintain a constant balance of vital chemicals without having to call in the doctor for each one. This would create a feedback system much like the body's own.

A marriage made in the laboratory

"We have married the technology of miniaturized integrated circuits to new discoveries in membrane chemistry," Moss declares. The superprobe consists of almost invisible membranes which are designed to react to specific ions and are linked to miniature transistors. Traditionally, chemists analyze body fluids by taking a sample of fluid and separating it into various components, points out Jiri Janata, an electrochemist who is also working on the superprobe. With the ion-sensitive field-effect transistors (known as ISFETs) which are used in the superprobe, each membrane reacts to one component selectively, making it unnecessary to do any preliminary separation. And because of their microscopic size, ten different kinds of membranes could easily fit on a tiny chip.

Eventually the most selective system in nature, the immune system, will be tapped in this way, Janata predicts, and he looks forward to the monitoring of many kinds of antibodies and antigens. "That would

Superprobe, only a millimeter wide, could provide the equivalent of a hospital laboratory in an arm.

be invaluable," he says, "as an early-warning system to alert doctors about various infections, and as a measure of how well the organism is fighting back." Such a system would be particularly useful in watching for signs of rejection in organ transplants and in monitoring the effects of chemotherapy.

The limiting factor in nearly all the products of bioengineering has been the lack of materials which are truly compatible with living tissues. Before the superprobe is tested on human beings, for instance, many more studies will have to be done on animals to determine whether the materials on its surface will cause blood to clot, and to find out how long the membranes can continue functioning before various substances in the blood adhere to them, blocking their accessibility to other chemicals.

The University of Utah has just received a $1.4 million grant from the National Institute of General Medical Sciences to study such problems in a polymer implant center directed by Dr. Donald J. Lyman, a polymer chemist. Lyman is greatly excited by the possibilities this will open up. "How many times in life does a person have a chance for so many successes?" he asks delightedly.

His projects include an artificial ureter which is proving successful in dogs and may one day help many cancer patients. "At present, if a tumor compresses the ureter, surgeons simply cut it out and let the urine collect in a bag at the patient's side," Lyman explains. "Though this is easy for the surgeon, it's traumatic for the patient."

He is also working on a macaroni-sized artificial blood vessel which can flex and pulsate as if it were made of living cells. The material for it was tailor-made in Lyman's lab so that it would not clot blood and would be able to form a good junction with natural blood vessels.

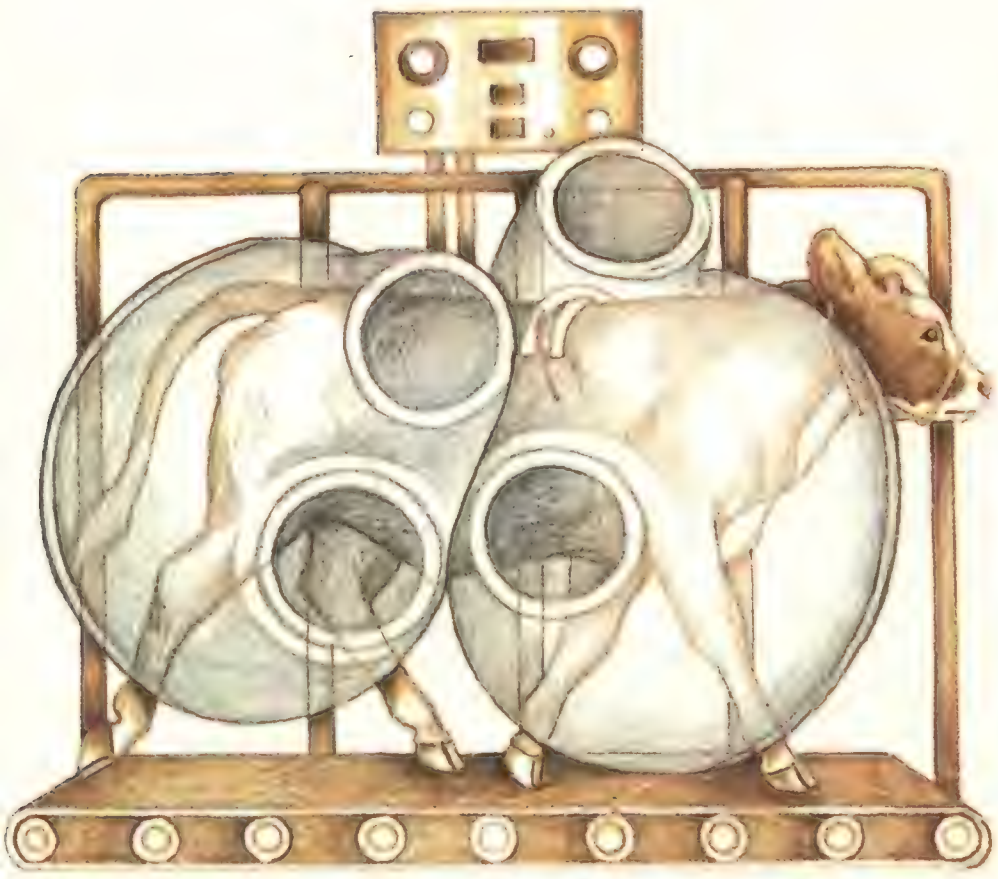
Dacron and Teflon didn't really work

"In the past, people used whatever materials were commercially available," says Lyman. In the mid-1950s, the first vascular grafts were made of Dacron, "which had been designed for wash-and-wear clothes," as he puts it. Then Teflon and nylon were tried out for various implants. But none of these materials was really adequate for use in the body, mostly because they stimulated the formation of blood clots which could break loose and do serious damage to the brain or heart. Lyman noticed that the blood clots seemed to form wherever certain proteins stuck to a surface. So he decided to study and manipulate the atoms in a polymer chain in order to achieve exactly the kind of surface he wanted: one to which specific proteins would not adhere.

This kind of research, he notes, has implications for the control of atherosclerosis, a disease characterized primarily by the adhesion of fatty substances in the inner lining of the artery wall—and the underlying cause of most heart attacks and strokes. It may also lead to new ways of diagnosing cancer, for normal cells will stick to certain surfaces and cancer cells will not. In fact, with a basic understanding of surface structures, almost anything becomes possible. His lab has already developed smaller and more compactible artificial blood vessels, including tiny, three-millimeter tubes which could be used by neurosurgeons to bypass obstructed blood vessels leading to the brain. But now the lab is also learning how to control the growth of different kinds of human cells by synthesizing special surfaces on which only certain types of cells will stick. This means that someday doctors may be able to grow natural tissues for implanted organs, or regenerate the skin of burn victims.

Lyman envisions implants made of materials that need not last forever—they would just serve as scaffolding for the natural growth of various kinds of cells, and when the man-made materials disintegrate, there would remain a natural surface made of living cells. This would make it possible to put implants into babies, for the regenerated tissues would continue growing after the implant disintegrates.

He also hopes that his group will soon reach the long-hoped-for goal of reconnecting severed nerves so they work again. He plans to use polymer cuffs over the cuts to serve as bridges. The inside of the cuff would be designed to make neurons (nerve cells) grow, while the outside would stimulate the growth of glial cells that insulate and support the nerve cells. "Then, if you could get nerve signals through these cuffs, as we are attempting to do in the lab across gaps of one centimeter, you could repair different types of nerve loss and paralysis," he says.



Air-driven heart, shown superimposed on drawing, allows this laboratory calf to exercise on a treadmill.

Meanwhile, a daring attempt to develop artificial sight and hearing through the electrical stimulation of nerve cells in the brain or ear is under way both at the University of Utah and at Columbia University in New York City. This work seems more startling than other forms of bioengineering because some of it involves penetrating the human skull. But it also holds a strange fascination because if the research ever does produce useful results—which is still in doubt—these will be modern miracles.

The strategy of the artificial sight program is to bypass the eye itself, ignore the optic nerve which normally relays impulses from the retina to the back of the brain, and rely on direct stimulation of a small area in the brain—the visual cortex—through implanted electrodes. Ten years ago a British physiologist, Dr. Giles Brindley, showed that when he inserted electrodes into the visual cortex of a blind nurse, who had volunteered for the experiment, and then ran a mild electric current through them, she saw isolated points of light, called phosphenes. Shortly afterward Dr. William Dobelle, who was then director of the University of Utah's neuroprostheses program (and now runs the Division of Artificial Organs at Columbia University's College of Physicians and Surgeons), started a series of experiments to find out whether such stimulation could be carried out without damage to the brain, and whether the resulting phosphenes would form meaningful patterns. A computer graphics program was developed by Dr. Michael Mladejovsky at Utah to "map" whatever phosphenes might be produced by the brain electrodes.

Artificial sight: "It's a triangle"

In 1973 the researchers used this program to map the phosphenes produced by electrodes which they temporarily implanted in the brain of a blind volunteer. Once they had a map, they selected only a few electrodes to activate and asked the volunteer what he saw. "Why, it's a triangle, of course—and it's pointing up," he replied. He also identified letters, geometric shapes and other patterns. Encouraged, in 1975 the team proceeded to implant 64 electrodes more permanently into the visual cortex of two other volunteers. Although in one case they produced almost no usable phosphenes (the electrodes had been placed too far forward in his brain), the other man—a 33-year-old who had been blinded by gunshot—saw 60 separate points of light in response to the stimulation. These were still not enough points to form all the letters of the alphabet, however, so the researchers decided to program braille characters instead. When these were flashed into his brain, the volunteer read them five times faster than when he used his fingertips. Furthermore, when a TV camera was connected to the system, he was able to detect white lines on a dark background —much like the flashing lights of a football scoreboard. He still has the electrodes in place now, three years later, and has suffered no ill effects. However, they do not benefit him in any way, and they don't produce any phosphenes unless he comes to the lab to be stimulated by the research team.

For a system of this sort to be effective, a blind person would have to have a miniature TV camera set in his eyeglasses (or enclosed in a glass eye) and powered by a battery. He would have to have a computer translate the information from the TV camera into stimuli that would fit his internal phosphene map. The computer

would have to be connected to a wire coming out of his skull, through an opening the size of a dime, and leading to an array of at least 256 electrodes for each brain hemisphere, or a total of 512 separate electrodes. And he would need assurance that the electrodes could function over a long period of time without damaging his brain cells, or without themselves being damaged by the corrosive environment of body fluids. None of this can be provided in the near future.

The artificial hearing program, run by Dr. Mladejovsky and also in its infancy, involves electrodes inserted in the cochlea, part of the inner ear, within the skull. Instead of phosphenes, they produce sensations of sound, "audenes." But it has proved to be extremely difficult for a totally deaf person to describe such audenes—to estimate their pitch, for example—so no computer program has yet been developed to map them. Besides, only a minority of deaf people have the kind of impairment which lends itself to stimulation of the nerves in the cochlea. Others would need to have the electrodes placed directly into their brains—a particularly tricky problem, since unlike the visual area the auditory cortex is deep in the gray matter. Altogether "it will be many years before something is developed that is of real use to a patient," according to Dr. Mladejovsky.

While all these diverse efforts are going on at Utah, an ambitious project which was dreamed up by Dr. Kolff 21 years ago is finally nearing fruition: an implantable artificial heart, made of polyurethane parts and powered either by compressed air or by electric batteries. Kolff put a crude model of such a heart in a dog in 1957 when he was at the Cleveland Clinic, but it soon became clear that developing an artificial heart for human beings—or even for calves, the currently favored experimental animal—would strain every aspect of bioengineering beyond its limits. There were problems of design, materials, power, operating procedures, and even controversies about the quality of life with such a device. A lesser man would have given up long ago. Instead, in 1970 Kolff recruited an imaginative medical student, Robert Jarvik, and let him loose on the project. Dr. Jarvik, now a seasoned researcher, believes that a battery-powered artificial heart of his own design could be developed for human use within five years. He also feels that this could save the lives of some 50,000 persons a year—people who might otherwise die from heart attacks, heart disease or during open-heart surgery.

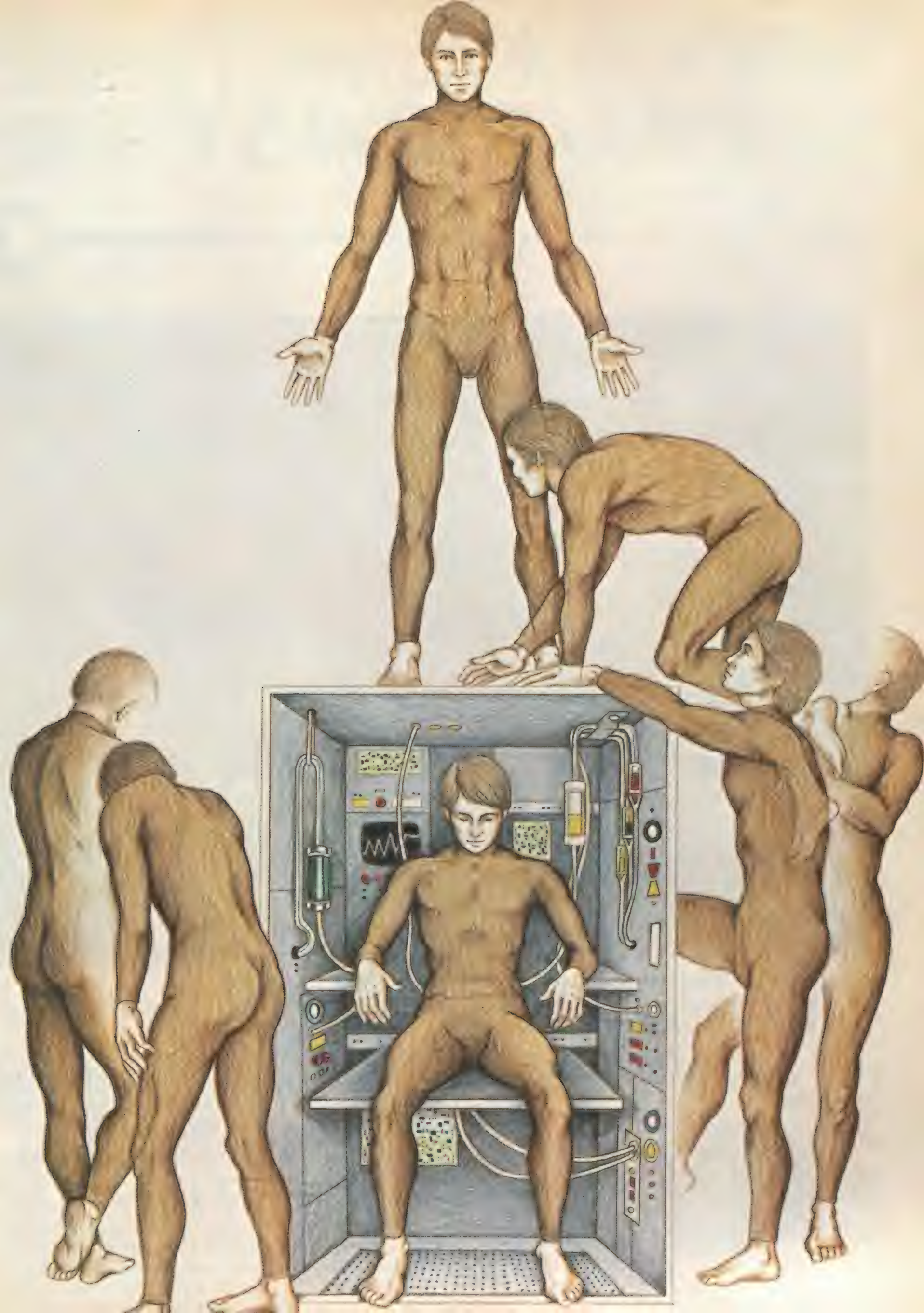
The most successful model so far has been an air-driven heart, with all its bulky machinery remaining outside the body. One calf survived six months with such a heart recently, and another was thriving five months after its operation, gaining weight and exercising on a treadmill. However, all these animals have long, thick hoses sticking out of their chests to bring in the compressed air that drives their hearts. They are permanently attached to a compressed-air machine—a fate which Jarvik would not want to inflict on human beings. He is betting, instead, on a new electro-hydraulic pump he has just developed, which should make battery-powered hearts much more practical.

Kolff, on the other hand, emphasizes that even paraplegics who are confined to a wheelchair can lead rewarding lives—and that a person with an air-driven artificial heart could have a relatively happy existence. "When you see those calves stand up the day after the operation, eat and exercise," he says, "and then compare them with cardiac patients who are in bed, too weak even to shave, you realize what an artificial heart could mean. There must be thousands of people who would prefer to be tethered to a drive system, especially one that has wheels, than to be dead."

Incorrigibly optimistic and impatient, Kolff does not want to wait for the perfect model before starting to save lives. Improvements can come later, he says, and anyway most doctors are too cautious.

Kolff's optimism is based not only on the great advances he has witnessed and helped to engineer since his first patient died some 40 years ago, but also on the array of medical problems where bioengineering has not even been applied yet. "If you want to understand the future of bioengineering," he says, "don't talk to doctors; talk to high school students, whose minds have not been ruined."

Advances in bioengineering promise to free patients from the wires and tubes which bind them to lifesaving machinery, a revolution symbolized in this tableau of future Man, like Prometheus unbound.



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PORSCHE+AUDI
Nothing Even Comes Close

By Richard L. Williams

In Dallas, as in most American cities, the contrast of glitter and squalor

Cities are so integral a part of civilization that their destiny seems linked irretrievably to Man's. Cities are joint efforts, the product—or at least the result—of many people's lives. Their culture, compared with that of rural communities, is as much more complex and intricate as is a symphony compared with the single plaintive, wailing note of a shepherd's pipe.

The child in some of us impelled us to the city, where magic or stardom or a career awaited, and if the reality was very different, still the concept, the ideal, existed. For the city meant movement and excitement and many forces in opposition and in agreement. A goulash of O. Henry stories, Ring Lardner, George M. Cohan, the architectural heritage of the Greeks and Romans, the ethnic cultures of the Italians, Irish, Polish, Orientals, on and on and on, cities have won, over the years, men's respect and even their hearts.

The sounds and silences of a city, the slanting light that finds its way past the sharp shadows of the buildings, the second-hand bookshops, the shopping-bag ladies, the penthouses in the sky, the Rainbow Room or the Top of the Mark, the new Hyatt Regency hotel in Dallas, the everything's-up-to-date-in-Kansas City spirit—all form a coalescence of givens when we think of cities. Or at least they did until a few decades ago, when unexpectedly everything about the city seemed to be in trouble, and the myths and accepted personality of the city went through a profound change, stemming from what seemed insoluble problems.

Suddenly nothing that used to work works anymore. The litany of causes, all of which we have heard before, becomes a cliché. And the sum of the causes does not fully explain the despair, the melancholy, the human pain the change represents. For the problem of the cities is more than budgets or taxes or balance sheets. It has to do with Man's dignity in relation to the city—the mythic city, which offered a setting in keeping with our highest talents and achievements, in contrast to today's city which sometimes seems to offer nothing but riots and a kind of embattled loneliness that is the antithesis of all that a city should stand for.

Ghostly in the smog, the towers of downtown form a mostly unattainable horizon for the slum dwellers

The problems cities share make a formidable list, all too easy to tick off. The worst one can be abbreviated to one word, race, or two words, race and class. Most affluent blacks and browns don't like to live next door to poor whites, but numerically more important, most higher-income whites don't like living next door to bottom-rung nonwhites. Neighborhoods where they do tend to deteriorate; the result is "white flight" by those who can afford it to prettier, safer, more homo-

In researching a series of which this is the first article, the author, of the SMITHSONIAN *Board of Editors, went to dozens of U.S. cities—youthful and elderly.*

Even in the Sunbelt, the problems outlast complex solutions that cost billions in money while leaving millions in misery

of West Dallas. Their cars may be air-conditioned but their well-littered housing project is not.

geneous in-town citadel neighborhoods, the suburbs or the countryside.

Or (to take another capsule label) crime: if urban life means living in daily, nightly fear of the addict, the burglar, the mugger, the murderer, who wants it?

Or schools: people are forsaking cities with educational systems that don't educate. School administrators and parents are being driven up the wall by organized teachers (many in all three groups have lost their sense of mission) and by federal courts that order strict and perplexing desegregation plans in many

Elegantly lighted at night, First International building stretches skyward beyond a gay fountain.

Photographs by A. Y. Owen

Victor (Vico) Bonilla, a Hispanic who has lived in West Dallas all his 49 years, is bitter about the failure of Dallas proper to deal with his area.

systems where white schoolchildren are already overwhelmingly outnumbered.

Or the slumlord: he ignores his taxes and maintenance, but not his rent collections, until his tenants move out of a building fit only for demolition—often by a paid arsonist's torch. Some neighborhoods are losing housing stock to abandonment and arson as fast as it used to be destroyed by urban-renewal bulldozers.

Or the white pioneer: when he (usually with few or no children) moves back into the city, spending a small fortune to "gentrify" some tarnished gem of a ghetto house, somebody poorer is likely to be displaced. No public agency has found a way to stem this ousting of the poor by the relatively rich.

Or jobs: the "factory flight" to warmer climates with lower taxes and lower wage scales leaves the older, colder, costlier cities with less of a reason to live but with plenty of unemployed living in them—including many of the black teen-agers whose unemployment rate is 41 percent, another so-far-insoluble problem.

Or redlining, supposedly outlawed by the Fair Housing Act of 1968: the refusal by lending institutions to make mortgage or home-improvement loans in the declining neighborhoods that may have provided them with much of their deposits (appraisers used to draw a red line around such no-no neighborhoods on their maps). Insurance companies that suddenly stop writing fire insurance in high-risk areas, forcing disinvestment and abandonment, practice their own effective brand of redlining: without insurance you can't get a loan anyway.

Or the improvident ways of cities themselves, in planning no further ahead than the mayor's next term of office—a current case in point: many cities are diverting emergency, shot-in-the-arm money from CETA, the Comprehensive Employment Training Act, not to train anybody but to pay regular municipal wages of cops and clerks. The cities are getting hooked on such "fixes" and lack the budgetary willpower to undertake self-imposed, cold-turkey cures. The threat of tax revolts does not make their choice any easier.

The federal government has done its part and then some, throwing money and manpower at problems it has helped to create. Since urban renewal began bulldozing people and property in 1950, billions of dollars in federal funds (not counting funds for freeways) have been pumped into metropolitan centers. Municipal, state and private investment have more than matched that. (The 1977 federal budget allocated $85 billion to state and local governments, with $35 billion earmarked for major cities.) A host of cities, still sick or believing themselves to be, are crying for more.

They will get it, though not as much as they want. The present administration and Congress are preparing to spend more, in the umpteenth incarnation of government aid (which indeed has done a lot of good) in the space of seven Washington administrations.

If solutions can be bought, it will be worth all the money and effort, for the sake of the millions who still live (though many wish they didn't) within city limits, and the rest of us too. The biggest part of the U.S. metropolitan population, about 89 million, now lives

in the suburbs, which seem to have inherited rural America's traditional dislike and distrust of the cities that gave them birth. The suburbs also are inheriting much of the disillusionment, decay and other afflictions of their parent places. And if a major back-to-the-city movement materializes, it will be led by the younger generation out there.

A few days before the newest national urban policy was announced (and the timing was hardly accidental), HUD Secretary Patricia Roberts Harris, the highest-ranking black of either sex in the administration, called a press conference. The subject was a $240,000 country-wide poll asking 7,047 people what they think about cities. Louis Harris, who had presided over the sampling, was on hand to help interpret it.

"When we laid it right on the line and asked people how the American society would be without cities—if they dropped dead and were suddenly wiped out in one fell swoop—only a small 11 percent nationwide thought the country would be better off," pollster Harris said. Fifty-five percent of the public thought the country would be worse off, because people need the cities for visiting friends, going to the doctor, bright-lights entertainment, getting exposed to culture, career opportunities and a wide range of services.

Yet the same poll showed that most people want to live anywhere but in the centers of crime, bad schools and racial conflict. That was one central, unsurprising finding of the poll: that a majority of the U.S. public thinks cities are great places to visit but doesn't want to live in them.

From a 33d-floor window, former Mayor Erik Jonsson, a founding father of Texas Instruments, looks out over Dallas skyline he helped create.

Payment (by whom?) for services rendered

More important, to Louis Harris and Mrs. Harris, was their conclusion that the country is getting a free ride off its cities. Payment for services the cities render is not being made by all the outsiders who use those services, but, thanks to "a 19th-century anachronism" of taxation, is forked over by the city-dwellers themselves, who of course are taxed where they live.

Except, of course, that taxpayers everywhere, including the boondocks, have been paying all those billions right along for federal and state help to cities. Both Harrises to the contrary, many private and public agencies, including HUD, which has nothing but tax money to spend, have been spending like mad.

But the most interesting places to look for efforts to reverse the general decline-and-fall are the cities themselves, not the offices of federal bureaucracy. Dallas is a good example of a city that is not going to fail for want of trying. It has been trying hard for years to grow up and out of the status of right-wing bastion and to make the big switch (for Texas, anyway) from every-man-for-himself to one-for-all-and-all-for-one. It

Flanked by U.S., Texas and Dallas flags, Chamber President Dan Petty takes a prideful stance outside Dallas' new city hall building.

Crisscrossing freeways in Dallas, not untypically, speed traffic toward downtown parking areas.

has had to get used to the constraints of planning and compromising, and to a dismaying influx of newcomers (one out of three Dallasites has been there less than ten years).

Yet it is a town that has everything, especially if you don't count an unexciting topographical setting that is just rolling prairie and more prairie. It has a Sunbelt skyline gone wild. It has the Superbowl champions, freeways galore, a new I.M. Pei city hall as big as a recumbent 56-story skyscraper. It has stately historic districts, some sincerely public-spirited businessmen, and the distinguished regional playwright Preston Jones (SMITHSONIAN, October 1976). Plus more than token nonwhite involvement in the affairs of the country's seventh biggest city. A high crime rate. Lots of money, too.

Also, well out of sight across the Trinity River, Dallas has a massive case of urban blight. The population there in West Dallas is 55,000, all but ten percent nonwhite and, as some residents put it, "all but 60 percent employed." Before the levees were built to

Dallas' central business district has been called "the biggest parking lot in the world." Skyscrapers

rise amid sites of future skyscrapers, crowded with parked automobiles of the ride-on economy.

A showcase when it opened 20 years ago, this West Dallas project has become a grubby place to live.

contain the Trinity, large parts of the area were under large amounts of floodwater much of the time. Today it is an industrial and low-income neighborhood with a magnificent view of the new, blue-glass-sheathed hotel in the Reunion complex and other lofty downtown structures, from which it is all easily overlooked.

Victor (Vico) Bonilla, a Chicano grocer on Singleton Boulevard and unofficial mayor of his barrio, showed me a cemetery in the neighborhood, so dilapidated you wouldn't want to be caught dead in it. "Our own historic district," Vico said with a sarcastic grin. "You remember Bonnie and Clyde. Well, Clyde Barrow is buried here." His Bonnie (Parker) lies not far away.

West Dallas has a gigantic 3,500-unit federal housing project that the city of Dallas is supposed to maintain, but does so half-heartedly. Many of the barracks-like buildings are broken-windowed or boarded up, and Vico says there is a million-dollar-a-month drug traffic through the project. Taken out there on a state visit, Muhammad Ali stared in at the sullen black residents who were staring out at him and, as Vico tells it,

In this North Dallas neighborhood of homes, $100,000-and-up, almost every house has its pool.

said, "I ain't goin' in there, or gettin' out of this car. Take me back to Dallas!"

Still, nobody's city is perfect and none ever was. Slums like West Dallas are nothing new. We think of such ancient urbs as aristocratic Athens, picturesque Pergamum and imperial Rome as being tidy all over, with streets too clean ever to dirty the edge of a robe. Such cities doubtless did have a high quality of life; some also had sordid hovels on their back streets. And if up-to-date Dallas has a shantytown problem, what American city doesn't?

Still growing and suburbanizing, Dallas is an exception to what has become the rule, that cities, even some younger ones in the West, are losing population steadily—taxpaying companies as well as taxpaying jobholders. Washington, D.C., is losing 8,000 people a year, though one would never know it from a runaway real estate market in which houses worth all of $50,000 sell for twice that and more. In this decade St. Louis and Cleveland have lost one out of six of their populations, Detroit and Atlanta one out of seven, Chicago one out of eleven. Dallas is, perhaps, luckier.

"We're not a port city and we don't have any great natural features," says Dan Petty, a city manager by trade who runs the Dallas Chamber of Commerce. "All we've had to work with is people."

When Erik Jonsson, a founder of Texas Instruments, was appointed mayor in February 1964 (he later was elected three times), he found the city was running down. As he looks back, "For a few years there was a vacuum; the old bulls of Dallas had grown tired, and some younger ones didn't have the stuff. Dallas was not spending enough money and trouble to keep abreast of what was coming." It also had a special problem, its collective discomfort in the wake of the Kennedy assassination.

As a nonpolitical businessman, Jonsson disconcerted city department heads by asking them, "Who's your choice for your successor here?" and twisting their arms to produce long-range organization plans. Within a year, seeking "a systems approach to governing a city," he initiated an ambitious program called Goals for Dallas. It sounded boosterish and was, but it was to work some wonders. Small groups formulated the plans. Eventually at least 120,000 people got involved in pinning down what Dallas needed, from more air-conditioned taxicabs to the new $44 million central library.

Some of the goals were achieved and some were not, but at least the city was taking hold of itself to make things happen instead of just letting them happen. Two years ago a second decade of goal-setting was drafted, and housing, left out of the first set of goals,

Old Warsaw restaurant, on edge of downtown, is no Polish joke; comrades abroad couldn't afford it.

In First Baptist Church, known as the world's biggest Baptist congregation, the choir booms out a hymn. In the pit, a full-size orchestra plays, and in the middle aisle, a TV camera pans over the scene.

was added to the things-to-do list. Dozens of cities have come to Dallas to ask how to set and achieve goals.

Dallas has acquired many things and places in the 14 years since Eric Jonsson went public. The new city hall with a giant plaza out front, the handsome old, and now refurbished, railroad station, and glossy, glassy Reunion, complete with hotel and revolving tower, are among its showpieces. There is the gracious Swiss Avenue historic district of grand old houses, the 64-acre warehouse area, another historic district for future in-town living, working and playing, and Thanks-Giving Square (actually a triangle), a downtown breathing-space with a chapel for meditating.

Dallas also contrived, through the long and arduous efforts of a 21-member volunteer committee, a model school desegregation plan calling for 14 "magnet" schools and busing about ten percent of the school population. The problem was one common to many big cities: with white kids making up little more than a third of the school population, the white families having moved to the outskirts, how do you integrate what's left? A local federal judge approved the blueprint, but a circuit court of appeals has told Dallas to lick its lips and try again. The result, as of the new school year, might have been chaos. But with enrollment slightly exceeding expectations, Dallas awaits new hearings in Federal District Court.

Not everyone is impressed. Visiting from Philadelphia, Edmund Bacon, a sainted-in-his-lifetime (by some) dean of planners, was disturbed by much of what he saw: diffusion and dispersal, instead of close-grained diversity. The new city hall is a long walk from anywhere, though shuttle buses now connect it to the convention center and Reunion; the location favored for a new center for performing arts and the museum will be eight blocks from downtown; the central business district, where 100,000 people work in the neighborhood of Neiman-Marcus, is all but locked up at night, inhabited only by hotel guests and vagrants.

As Bacon said to a local writer: "One of my most vivid images of downtown Dallas is the locked gate. I arrived at Thanks-Giving Square at five minutes after 5 and couldn't get in. *That's* a telling image. I was told the place was designed to keep the 'wrong people' out. That must include me."

Dallasites tend to ignore Fort Worth, their neighboring city just to the west on the Trinity, and many have never been closer to it than the vast airport in between. Many have never heard of Architect Philip Johnson's water garden, a busy public oasis downtown. Or of the $100 million Tandy Center, where a three-level shopping mall with private subway system connects with the new public library, which is mostly underground and handy to three-quarters of the city's working and shopping population.

But Fort Worth, San Antonio, Galveston and Houston among other Texas centers have, no less than Dallas, big problems with Sunbelt fast growth, includ-

ing ghettos that the federal "urban partnership" programs haven't really got around to.

Up to now the great federal plans and the promise of more and more federal money (assuming Congress provides it) have concentrated on older "distressed" cities, mainly in the North and Midwest. But, there is plenty of distress, not just from growing pains, down South, too. And down there the inequities of life are just as apparent. From the slums of Houston, the only major U.S. city without zoning laws, the poor have a breathtaking view of the gleaming towers of downtown. As good a view as forlorn West Dallas has of the fantastic skyline of "Big D" across the river.

As Southern cities go, and to a lifelong lover of cityscapes, Savannah has all the grace and charm and rhythmic beauty that Dallas never had—and it came perilously close to losing it all by sheer neglect. In the early 1950s its 20 traffic-thwarting squares, laid out in 1733 by General James Oglethorpe as defense strongpoints, were overgrown and going to ruin. The lovely old houses that ringed them were crumbling, too, and the waterfront of old cotton warehouses along the Savannah River was going to pot.

What turned the riverfront around was federal money, to be sure, $7 million of it, and some intelligent, persistent planning, but mostly a succession of determined people who saw what they had and wouldn't let it go. By now the riverfront, thanks to heads-up planners, sensitive architects, resourceful engineers and some imaginative citizens, is a place of beauty, a safe and satisfying place to stroll and shop and sight-see. All this and more was generated by a horde of affluent people, armed with $60 million in bank loans and private money, who rehabilitated the wonderful old houses around the squares.

One of these people, the present leader of Savannah's sprucing-up forces, is Leopold Adler II, an investment banker who is trying to pull off the neatest trick of all. That is the remodeling of 600 valuable old dwelling-places in the city's Victorian District—164 acres in all—saving these gems of the past for the future *without* displacing the mostly poor, black families who inhabit them. So far, by putting some of the inhabitants to work with CETA funds and teaching them construction trades, and by legerdemain of financing, Adler is making it succeed. Savannah still has its blocks of boarded-up storefronts and kindred eyesores, but it has been saved.

If you love cities and are citified from the time when being a city boy didn't mean being a city slicker, you hate to see much of what has happened.

I live near, and work in Washington, and in preparing this survey I have roamed to the four corners of the country. Not one of the many cities I visited is as stately as the capital, though all have their stately aspects, and none is any scruffier in its back streets. Without any exception they show the same scar tissue from well-intentioned but heedless bulldozing for "renewal" and for freeways, show the same problems—and share the same contradictions. Flight to the suburbs is still going on (as the time draws nearer when we shall run out of gas) and abandonment of yesterday's fine neighborhoods and the after-hours desertion of downtown—and at the same time a back-to-the-city trickle that may become a flood tide.

Except when a big industry and its people leave town or move in, cities don't change overnight. You have to reserve judgment on their failures and successes because real change for better or worse can take a decade. During most of the dozen years when I lived a few minutes from downtown White Plains, New York, the central area was a devastated wasteland in the wake of the nation's largest urban-renewal grant to a small city. Hundreds of shops and shopkeepers had been uprooted, never again to be seen.

Out of the wreckage White Plains got a new library and a new county courthouse, the latter with a great crack which ran down one of its blank exterior walls. (The crack was patched later.) But only this year is new retail construction filling in what looked like a wartime bomb site.

The disfigured little city of White Plains may recover, and that brash big city in Texas may accomplish its Goals for Dallas. But it will take time.

Ignoring urban problems he can do nothing about, Young Kenneth Chaney tilts back a chair outside family's West Dallas apartment, teasing his trumpet.

In future issues: old cities fight for life; young ones fight old age

Lesson from a dying breed.

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On parade, a troop of ring-tailed lemurs strolls about at the Berenty Reserve. Although primarily

By Alison Jolly

Some tall tails: remarkable lemurs of Madagascar

Primate cousins of apes and men fight duels with scent, control their populations and live in close harmony with their environment

Text begins on following pages

arboreal, the troops come down several times a day to feed. These two pictures are by Russ Kinne.

To begin the day, ringtails warm their sparsely furred bellies and thighs in the morning sunshine.

Madagascar's remarkable lemurs

One Eye (right) limped after his troop's parade. The ringed tails rose in a series of pert question marks that swayed with the movement of the haunches, but One Eye's tail dragged in the sand behind him. His right foot gave way at each step. When the troop (preceding pages) stopped to stretch out arms and bellies towards the warmth of the morning sun, One Eye dropped heavily to the ground. Another male turned back from the rest, to touch muzzles with him, in the ancient mammalian gesture of greeting and reassurance.

One Eye was dying. He was not dying from disease or the scars of any particular battle. He had lost his eye years before, but still leaped from branch to branch 50 feet above ground. One Eye was dying of old age, a rare privilege for a wild animal. His death, in turn, would make room for another lemur to live in his isolated forest patch in the southeast corner of the Malagasy Democratic Republic (Madagascar).

He lived at Berenty on a 240-acre reserve of gallery forest by the Mandrary River. The Berenty Reserve has been guarded for more than 30 years by the de Heaulme family. The animals there are trusting, so that over and over scientists have "discovered" Berenty as a study site. I went there first in 1962, and am only one of many who have conducted research there.

One startling fact has emerged from the studies and censuses. The populations of ring-tailed lemurs and white sifaka lemurs in that tiny forest seem to be stable, and their habitat undamaged. Those few lemurs, unlike their distant human cousins, apparently live in equilibrium with their environment.

What are lemurs, and what is their environment? They are primates. They are of the same mammalian order as monkeys, apes and men. They are prosimians; however, their long muzzles and narrow skulls make them more distantly related to true monkeys than monkeys are to people. Present-day lemurs resemble our earliest primate ancestors.

Like most lemurs which are protected in preserves, battle-scarred One Eye showed little fear of humans.

Lemurlike animals of 70 million years ago left their fossils in North America. A few of their prosimian descendants survive still in Africa, Asia and Madagascar. When the monkeys evolved on the larger continents, bounding through the trees in chattering bands, the less domineering prosimians were forced to remain or to become nocturnal, small, solitary and largely insectivorous creatures, such as the bush babies and pottos, tarsiers and lorises. But as lemurs developed in isolation on Madagascar, some of them evolved as diurnal, social creatures.

Lemurs are a parallel line of evolution, a natural experiment in primate behavior, because they inhabit the living museum of Madagascar. Continental drift

Primatologist Alison Jolly has written extensively about lemur behavior. She is now working on a book about Madagascar for the World Wildlife Fund.

wrenched Madagascar loose from Africa perhaps a hundred million years ago. Mammals had probably scarcely begun to evolve, but as the Mozambique Channel slowly widened, a few mammals rafted across to the new land. One, or several, were popeyed ancestral lemurs, clinging with all four hands to the wave-washed twigs.

When they arrived, they found not an island but a small continent, largely or wholly covered by trees. Madagascar is a thousand miles long. Its climate varies from semiarid to superhumid—20 to 450 centimeters of rain per year—and its landscape ranges from rain forest to desert. Small wonder that the plants and animals that did reach here have speciated explosively. In a natural Madagascar forest, some 90 percent of all species are unique to the island continent. Like Australia, this is a laboratory of evolution.

But Madagascar is under enormous pressure from Man. If you fly to the Malagasy Republic, you know that the jet is near the coast when the Indian Ocean turns red. The center of Madagascar is bare of trees, the result of centuries of slash-and-burn agriculture. Three-quarters of the land is now cleared. The water is red because the eroding hills bleed red clay down to the sea.

To see the Malagasy forests, then, you must travel to the ring of surviving woodlands around the coast. There you will find mouse lemurs (p. 78), dwarf lemurs, and hapalemurs crunching bamboo like miniature pandas. You may hear the variegated lemurs roar or the indris sing.

Elsewhere, in different habitats, are brown lemurs, nocturnal mongoose lemurs, white sifakas (p. 80), aye-ayes (p. 79), forked lemurs and, in the far south, the jaunty ringtails that swagger through the scrub.

The adventures of Domino

For the ringtails of the Berenty Reserve, spring comes in September. Early one morning when I was there, from the shadowed foliage of a great old tamarind tree there hung 20 black-and-white ringed tails, like huge fuzzy caterpillars. The tails twitched, attached to arched gray backs. Out of the shadow appeared raccoonlike face masks. Then a female sat back on her haunches. The first lemur infant of the season clung to her belly fur.

It was very new, still damp, about three inches long. Its head was almost spherical, like a Ping-Pong ball with black eye-and-muzzle spots painted on. The tail dangled in a minute corkscrew, its stripes like a dashed line drawn in soft pencil. What to call him? Domino! A little masked domino with three round spots for eye, eye, muzzle.

Domino clung with hands alone, his feet almost

While feeding, this lemur lets its tail hang free. Tail is used for balance, but is not prehensile.

Baby ringtail clutches mother's belly fur. Infants have reflexes similar to those of human babies.

helpless in his mother's belly fur. Development proceeds from front to back. Domino could suckle, could lift his head, although he did so rarely, and could pull himself with his hands toward the nipple. In a few days the nerves would function better down the length of his spine. He would cling and push more strongly with his hind legs, and his tail would curl into a prehensile belt round his mother's waist.

Domino did not look like a human infant, yet many of his reflexes were the same. Newborn babies, like newborn lemurs, can clutch with their hands and push with their arms and often lift their heads, as long as they are placed with tummy against something —our ancestors' position of ventral contact with the mother. If you let a human newborn's head drop sharply, or slap its bed, its arms and legs flap wildly toward the midline and its hands clutch in midair. This is Moro's reflex, used for many years by doctors to test babies' coordination. Not until the 1960s did we realize that the Moro is the ancient clutching of a primate infant for its mother's belly fur when she jerks into movement.

And the mother's response to all these fixed gestures of groping, holding, nursing? The human beams at her child; the mother ringtail drops her chin on Domino's head and licks his tufted ears. So begins the process of learning and teaching. With every action and reaction, mother and child create a new and personal bond. Biologist Helen Blauvelt has filmed the newborn's reflex contact behavior being stimulated by expressions of affection from the mother.

On this morning the troop of lemurs stretched, defecated, began to click and grunt—the sign for the day's first promenade. One, then another, leaped downward from branch to branch. They thumped onto the path. Soon all 20 of the animals paraded toward the forest edge, tails in S-curves over their backs.

A group of females and more dominant males kept roughly together at the front of the troop, but two more males lagged behind. As they passed a sapling, one sniffed it, seized it with palms and wrists, then jerked his shoulders from side to side. The perfumed spurs on his forearms gouged horizontal scars on the bark. Favorite marking trees grow permanently scarred, and the incisions last for life, like African tribal cicatrices.

The male sniffed the bark again for good measure. Ringtail males know each other's marks and those of males from neighboring troops. If you plant a total stranger's mark in their path, they go berserk, sniffing and overpainting their scents violently. The tree scarring occurs at sites along all the troop's paths, and communicates individual, not just group, information.

The troop reached the goal of the parade, trees in fruit. The lemurs bounced upward, crawled out to branch ends, reached out and hooked the fine twigs toward their muzzles. They gobbled ripe fruit, stripped the new leaves, sometimes licked the flowers.

A female I called Jessica, her stomach taut with her unborn babe, saw that the troop's lead male was

In the open, three ringtails keep 180-degree watch.
Unlike some lemurs, they find safety in numbers.

ensconced among a clump of golden berries. She bounced to his branch. He did not wait to be clouted over the ear, but sprang away hastily, in the direction of male number two. The second male had been watching his superior, for male ringtails keep a rank order throughout the year, reinforced by chases, threats and fights. Insouciant females, on the contrary, have priority over males for space and food. Jessica settled to eat with never a backward glance at the quarreling males.

Male two leaped off his branch with a high-pitched call, the corners of his mouth drawn back. Male one swaggered toward him, stopped to glare, then, order restored, settled back and spread his arms out wide, with white belly fur toward the sun. Malagasy legend says that lemurs worship the sun, holding their arms out in prayer. Scientists say their temperature fluctuates more than other mammals', so that after the night's chill they use the sun to raise their body heat to proper functioning.

After an hour of feeding, the troop was interrupted by the arrival of a neighboring troop—15 animals promenading toward the same clump of trees. With ringtails, there is absolutely no predicting the reaction. The troops may mingle, apparently amicably. One or the other may move off, fast or slow, with no obvious signals given. Or, they may fight. If they fight, it seems that females do most of the challenging, scratching, wrestling and knocking each other off branches. The core of a ringtail troop seems to be the band of females; males operate under different rules.

In this case, the troop moved off without fighting, Domino's mother and Jessica well to the fore. Two males lagged behind, as before. Then one of the other troop came forward to stink-fight.

The new male rocked back on his haunches, and drew his tail between the spurs on his forearms. His muzzle flared, his eyes narrowed, his ears lay back along his scalp. Then he stood and held his tail above his back, pointing at his adversaries. He shook it, quivering it like an outraged feather duster.

Then he simply sat down and waited, while one of Jessica's males marked a twig, in the same gestures he had used alone by the trail. Jessica's male bounded forward—all of half a meter, though he could have easily closed the five-meter distance in one leap. He

Nocturnal mouse lemur, the size of a field mouse, is the smallest primate. It nests in holes in trees.

then paused, while the new male took his turn to mark.

The tournament involved a good 20 minutes of tail waving, branch marking and rushing in place. Neither animal gained ground. Only once did they make a mistake in timing, and both tail-waved simultaneously, the two backs and tails arching toward each other in answering pattern like two halves of a heraldic design. The whole procedure was as ludicrous as a medieval joust, and ended with each male turning back to its troop.

It was apparently pointless, yet such stink-fights in the long run determine the males' chance of ever siring offspring. The individual scent marks, the individual challenges, are not defense of troop, but a jockeying for position, an attempt to find the most suitable troop before the next breeding season. In November as many as one-quarter of the males change troops. Then they are in position for their final challenges in April.

November and December bring the rains. January and February bring cyclones that rage inland from the Indian Ocean. At last, in March, the summer storms are over and the lemurs work up to their own private storm of the mating season.

For six weeks before mating the tension rises. Males stink-fight more and more frequently. Females cuff males, and one another. The infants, weaned, have grown into playful juveniles, although when not in bouncing play groups of their peers, they still follow their mothers closely. The juveniles have matured to subadults. Their genitalia are too small for breeding, but they strut around, sniffing and posturing as adults do. The woods are filled with lemur calls—the click, rattle and meow of the restlessly moving troops, coyote howls and answers from neighboring males.

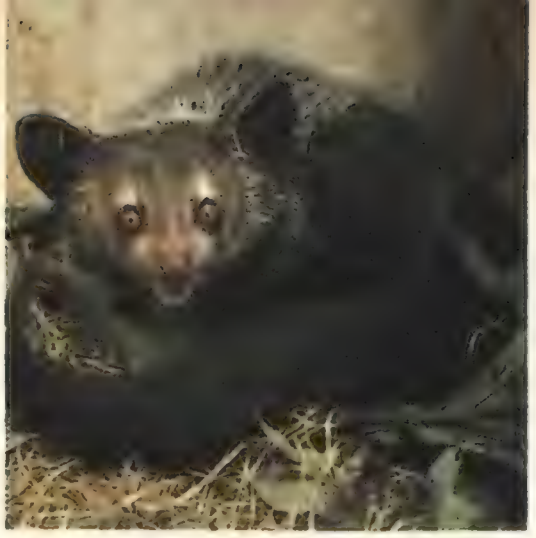
At last the first female comes into estrus. She is receptive for a day at most, probably for only two to four hours. The males leap at her and at each other. They start to jump-fight, prancing and springing upward on hind legs. This is no mock battle, but an attempt to grapple with an opponent and slash him with a downward stroke of the upper canines. The males wound each other in ears and limbs and flanks with three- or four-inch gashes. When one male appears victorious, he goes to join the female, but others pursue him. He mounts, but then tears off the female to resume the fight. At last the rivals lose heart and let victor and female go off alone, as a consort pair.

Strangely, the winner may be a subordinate. The jealously preserved male hierarchy falls to pieces in the violent jump-fighting, and a third- or fourth-rank male may be the troop's Don Juan. Then, after the brief two-week orgy of the mating season, the Don Juan resumes his old status, and he and the others sprawl exhausted on the branches.

Repeatedly, lemur watchers confirm that subordinates may do the mating, but that only males within a troop seem to mate with the females of that troop. Males from neighboring troops try, but appear to be driven off by in-troop males. Somehow, then, a ringtail male must use all the information he has, from scent marks and howling and chasing, to place himself among all the males of the neighborhood. Clearly, "dominance" among lemurs is more complex than a simple pecking order.

We also suspect that it is the core of females that probably gives the troop its continuity. Indeed, lemur females have priority on food and space, while, among our nearer relatives, the monkeys and apes, males

Cat-sized black lemur is diurnal, roams forest in small groups.



The aye-aye, one of world's rarest mammals, uses big ears to listen for wood-boring insects, which it then captures with long fingers.

The squirrel-like lepilemur is a nocturnal, solitary creature.

have priority. This female dominance is a trait shared by ringtails, brown lemurs, sifakas and indris—that is, all the social lemur genera whose behavior has been closely studied in the field—and it appears to be an inherited characteristic.

Among most of the apes—orangutans, chimpanzees, gibbons and siamangs—the females forage alone, but female lemurs travel together, feed together, groom each other, and wrestle and cuff the females of neighboring groups when there is a troop confrontation. Why is it in their interest to stick together?

There are two reasons, both relative to size. Lemurs are small, and the trees are not. A fruit tree that could satisfy one female chimpanzee can hold a whole troop of ringtails. The distance from tree to tree varies with the forest's richness, but is not necessarily different for lemur or chimp. Even though a large animal can maintain its body temperature more efficiently than a small animal, it is less economical for a large animal to move, so a lemur spends less energy moving from tree to tree than would a similar weight of chimp. Therefore, similar forests can support more small fruit eaters than large ones.

The second reason for sticking together is predator pressure. The apes are large and powerful creatures. Lemurs are not. The social group has more eyes and ears to warn against attack. Malagasy eagles and harrier hawks frighten lemurs into screaming pandemonium, and sifakas into a bellowing roar. When the screaming starts in a troop, all the lemurs stream downwards under cover of leaves. Also, the short mating season in April and two-week birth season in December may serve to "swamp" predators. The large number of young in a single troop may present the predator with more opportunity than it can handle.

Lemurs are also preyed upon by the fossa, a lynx-sized animal that resembles a cat but in fact is a member of the aberrant Madagascar viverrid carnivores, a group unique in the world. When the fossa wanders into the woods, lemurs mob it as birds mob an owl. There is safety, or at least better safety, in numbers.

It seems, from repeated counts, that the populations of ringtails and white sifakas in the Berenty forest have remained stable for at least 12 years. This is extraordinary in two ways: first, the few other primate populations for which we have long-term data have fluctuated wildly—from climate change, epidemics, or no obvious reason. And the lemurs are probably a closed population in an island reserve. If they remain at about 150 ringtails and 100 sifakas in a 240-acre reserve, with little chance for in- or out-migration, they have surprising delicacy of balance with their environment.

Zoologist Vero Wynne-Edwards proposed that social animals may keep themselves at optimum population density, guarding food and other resources against bad times. It is clear that individuals guard space in their own interests beyond their immediate physiological needs. This is crude biological foresight, like getting hungry and eating somewhat before the body tissues are in dire need. Animals can also guard extra space in the interests of close kin, even at some detriment to their own interest.

Ring-tailed lemurs and sifakas seem to do just this. The surprising thing is the accuracy of their calculations. In wet years of plenty and dry years of famine there are always about the same numbers of lemurs.

Again, there is a question of scale. Ringtails can live in captivity for more than 20 years. Sifakas, being larger, would probably live longer if we could keep them in captivity at all. This is enough for even one animal to see several cycles of good and bad years. It is in an individual's interest to keep enough space for its own lifetime, and also in the overlapping interests of close kin.

But why don't a troop's own offspring expand to overcrowd their own space? There are only two possibilities: birth control and death control.

Birth control is not as silly as it sounds. Many animals have evolved to have fewer offspring, and to put more care into each one. Where a species' environment is fairly stable, predictable and full, individuals will have to compete for the available space. The best-

Acrobatic sifaka lemur leaps from branch to branch. It will rotate in air and land with hind legs first.

endowed offspring, then, are the winners. If the environment is fluctuating, unpredictable and at least sometimes empty, the parents who have many offspring are the winners. We see just these choices among people—if your children face famine, rioting and infant epidemics, better for your genes to have eight offspring and hope some make it through the likely shipwreck of the family. If your children will probably survive, better have two, then lavish on them the kind of exceptional support that will incline them to produce your grandchildren and finance them through, say, medical school.

Primates as a group are "K-selected"—that is, they maintain rather stable populations—as opposed to "r-selected" animals, whose populations are apt to boom and crash, and may become plagues. We are back to Domino, with his four-and-a-half-month gestation, his six-month dependence on his mother and his two-and-one-half years till first mating. A cat of the same size can breed at less than a year of age and bear her litter after two months' pregnancy.

Even so, about 50 ringtails and 20 sifakas are born in the reserve each year. They would be enough, if all lived, to swamp the precarious balance of nature. They die—from falls, predation, perhaps from other causes. Half survive to a year of age, and half of those to adulthood. Apparently that is enough to replace the One Eyes, laboring farther and farther behind as the troop forages, growing thinner and more ragged of fur in the harsh September days.

This is the season of birth. It is also the season of death. The One Eyes who will not survive to eat the new tamarind leaves make way for a few of the newborn Dominos.

The final question: if they can do it, why can't we? In 1962, when I first saw that Madagascar woodland, there were five million Malagasy people. Today there are nine million. There were three billion of the human race. Today we are more than four billion.

The Malagasy cut and burn their forest, and watch their cleared land erode into the sea, and no one family behaves as though it lives on an island. A person in the rich countries consumes many times as much as an average Malagasy, and very few of us behave as though we have just one planet to share.

We can trace our personal beginnings to a baby like Domino, just starting the fusion of learning and instinct which will give him his role in life. We can trace our evolution from the prosimians that first began to specialize in learning, long life, social dependence and care for their young, and eventually became more complex in mind than any other animals. We can see that the lemurs, relative to other mammals, have few young, buffered over a long life against their varying environment.

Why have we, who are the outcome of the primate line, failed to learn this lesson?

Photographer Kinne finds a pensive sifaka. Defenseless, trusting, it cries "chi-fac" at intruder.

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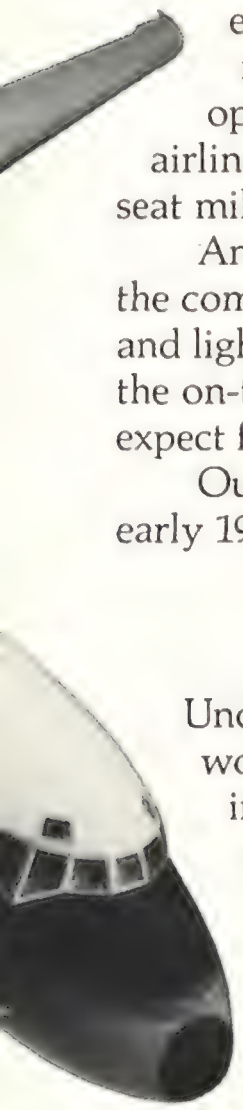

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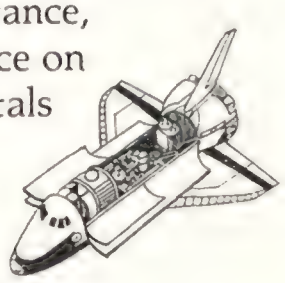

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By Jack Fincher

Sleepers are given polygraph tests to solve a riddle

Studies of those people with disorders may help us understand the brain's output of mysterious nocturnal messages

I have always been a light sleeper, my consciousness never totally extinguished, warily monitoring the minutest sound like a small spider alive to the slightest tremor of any strand. Or so I believed, until I spent a night snoozing under a net of electrodes at the Stanford sleep research facility in Palo Alto, California, one of some 20 major sleep clinics scattered around the country.

Some of those electrodes were glued to my scalp, and transmitted the changing electrical state of my brain on an electroencephalogram, or EEG. Others were taped to either side of my eyes to pick up their movement. Still others were attached to the muscle just below my chin to register loss of tone. An elastic band across my chest and a small temperature sensor placed under my nose monitored my breathing. All of these devices in turn were hooked up to a polygraph machine in another room, where the results were continuously recorded.

In clinics such as this, researchers have recorded the brain waves and muscle responses of sleepers over thousands of nights, seeking clues to the nature of sleep and cures for its disorders. The sleeping brain, they have discovered, is far from idle, and its nocturnal activity has some surprising effects, paralyzing us at some points during the night and causing a flurry of darting eye movements behind our closed lids. The clinics have also discovered that sleep disorders are far more widespread than previously suspected, and may afflict as many people during the daytime as during the night.

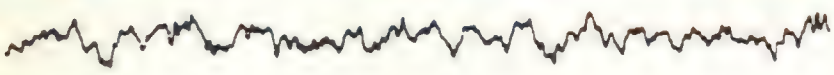
By the time I awoke at Stanford, the researchers knew a great deal more about my sleeping habits than I did. What seemed only a moderately restful sleep to me had included intervals of deep sleep throughout the night, according to the electrodes. All I could recall was a brief dream, about the two friendly research assistants who had wired me up leading a jolly parade of stuffed animals around my bed. In fact, I had spent the night, as most of us spend our sleeping hours, on a mysterious odyssey of brain waves whose meaning has baffled science. Sleep, says Stanford sleep physiologist William C. Dement, "is the biological riddle of the 20th century." I began to see why as one of Dement's assistants, Steve Coburn, graphically described for me what the electrodes had been recording as I slept.

As the battery of pens scribbled away on a thousand pages of accordion-folded paper, I had tossed and turned in the dark for about an hour (a predictable "first nighter" reaction to a strange and scientific setting, Coburn explained). Then, with utmost naturalness, I slipped progressively into the four classic stages of ordinary nighttime sleep.

My eyes began to drift from one side to the other, as I entered the first stage. My normal waking brain

A sleeper bathed in infrared light at the Stanford research facility is wired with electrodes which record brain waves, eye movements, muscle activity.

Polygraph monitored by Stanford research assistant Steve Coburn records data from electrodes on sleeping patient, seen above "polysomnogram" on screen.



In first of normal sleep's four stages, small, fast brain waves appear on EEG record (below sleeper).

In second stage, brain shows short bursts of activity (resembling spindles) as light sleep begins to deepen.

waves—the rhythmic ten cycles per second known as alpha—started breaking up into low amplitude, relatively fast mixed frequencies. As Dement likes to point out, the onset is not "a slow descent into oblivion through a kaleidoscopic reverie of half-formed images and undefined sensations" but an instantaneous event: "One second the organism is aware—the next second it is not. Awareness stops abruptly, as if 10 billion furiously communicating brain cells were suddenly placed on 'standby' status." I was, at this point, lightly asleep.

After only a few minutes, two significant wave forms appeared in my EEG to signal the second stage, the deepening of sleep: a "sleep spindle" or rhythmic burst of faster waves that waxed and waned over a second or two, and the "K complex," a jagged peak-and-valley jutting out of the low spiky EEG linescape. This deeper but still light stage, sometimes called theta or twilight sleep, lasted several minutes.

In the third stage, sleep spindles still appeared but intermittent alpha and theta increasingly gave way to delta, the high amplitude, slow wave, rhythmic oscillations. These typify deeper sleep.

Ten minutes later I reached the fourth stage as delta became predominant; I had struck bottom. Waking anyone from delta, says Dement, is extremely difficult, although the disturbed sleeper may slip into one of the lighter stages in response to noise or touch.

With a series of languid body movements a half hour after I first fell asleep, I then began my climb toward consciousness again, a journey that led me 30 minutes later back to the brink of stage one. There, something different now happened. Sawtoothed waves appeared on my EEG, my eyes began to move rapidly beneath their lids, and my muscles relaxed to the point of paralysis, a fact conveyed by the electrode on my chin. I had entered the eerie realm of sleep marked by the rapid eye movements of dreaming—a separate stage known as REM sleep.

Physiologically, I have since learned, REM sleep is so radically different from non-REM (NREM) sleep that it can be classified as neither light nor deep—an enigmatic state of affairs that prompted one sleep researcher to observe that it appears "as different from NREM sleep as it is from wakefulness." Like most people's, my REM-NREM cycle averaged around 90 minutes. But the periods of REM sleep and dreaming became progressively longer as the night went on, the NREM sleep more and more confined to stage two.

Having shaken my image of myself as a light sleeper, Coburn reassured me that, like many people, I did have what his boss would call a very sensitive "night light in my ear." The architecture of my sleep could be considered typical of a healthy person of middle age—but the more scientists discover about "typical" sleep, he added, the more its nature seems to elude our understanding.

Despite the increasing mass of data from electrodes, EEGs and polygraphs, sleep researchers are little

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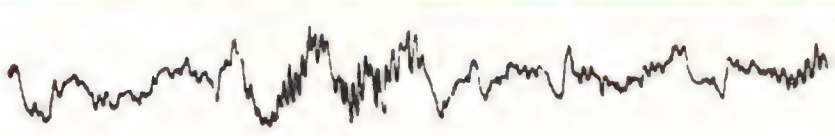
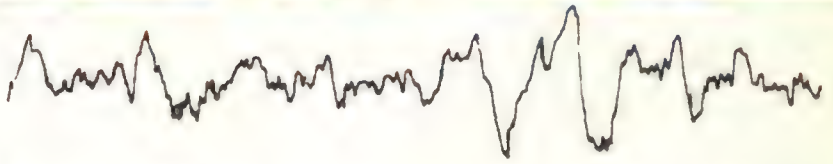


In the third stage, larger, slower brain waves appear as the half-hour descent to deep sleep continues.



Fourth stage, with large delta waves, is followed by ascent to lighter sleep, then to dreaming (REM sleep).

closer than poets to explaining sleep. Shakespeare once praised it as the "balm of hurt minds, great nature's second course," but the scientists have been unable to prove that sleep restores either the brain or body in any manner they can comprehend. Indeed, they have no answer to the most basic questions: what is sleep, and why do we need it?

In search of the answer, modern sleep research has left a trail of demolished myths and dented totems. We now recognize that, contrary to the notion popularized in the 1940s, the shape of your body has little to do with how well or how badly you sleep. The theory then was simple, dividing people into three types: the chubby endomorph, who enjoyed sleep almost to a fault; the strong, athletic mesomorph, who slept soundly, but wasted little time at it; and the thin, nervous ectomorph, a poor sleeper and sometime insomniac, whose awakening state resembled a hangover. These types, however, have all failed to sleep according to form when tested at sleep clinics. As it turns out, the skinny ectomorph may think he thrashes from side to side all night and still qualify as a world class sleeper according to the EEG, a truly objective test in the strange twilight zones of nod. Similarly, the lusty snore of the athletic mesomorph and the dead-to-the-world appearance of the chubby endomorph may signal chronic sleep difficulties.

Old notions that sleep is good for you and you can't get too much of a good thing have given way to new uncertainties about just what sleep does for you, and how much you need. People confined by circumstance to bed 24 hours a day sleep not a whit less on the average than anyone else. Conversely, those who deprive themselves of sleep for days at a time in the interest of science betray few if any lasting effects. A San Diego high school student named Randy Gardner in 1965 stayed awake 264 hours and 12 minutes—more than 10 days. His first night back in bed he slept only 14 hours and 40 minutes—and awoke essentially recovered.

What researchers do know about normal sleep has, until recently, come largely from studies of people with sleep problems. In the last two decades, some sleep clinics such as the one at Stanford have engaged in what are known as deficit studies, sometimes called "keeping your eye on the hole and not on the doughnut." Deficit studies have had a long and productive history in the neurosciences. A meticulous inventory of mental and sensorimotor abilities lost to head wounds suffered in combat and automobile accidents, for example, has enabled researchers to map the precise function of many parts of the human brain that might otherwise have long remained a mystery.

Similarly, the sleep clinics have amassed a wealth of data about sleep by studying its anomolies, seeking to expose by their absence the normal mechanisms of

Jack Fincher is the author of Sinister People: The Looking-Glass World of the Left-Hander *(1977).*

Morpheus. Now sleep research is branching out in other directions as well. At Harvard Medical School's Department of Psychiatry, neurophysiologist Allan Hobson is looking at sleep as behavior, using time-lapse photography as a new research technique.

"The clinics have mapped the territory," says Hobson. "They've documented how people sleep electrophysiologically, but there's behavior going on in those rooms, too. The time-lapse technique allows us to observe and measure the behavior, and relate it to what the EEG's are telling us." Some of these photographs seen on these pages are part of a traveling exhibit, "Dreamstage" (currently in St. Louis), based on sleep research at Harvard and designed to convey the behavior of sleep and its connection with brain activity.

Working with photographer Ted Spagna, Hobson records sleep behavior using a small overhead camera which is automatically triggered at regular intervals throughout the night. Periods of immobility and movement can be measured and correlated with stages of sleep as shown by the EEG.

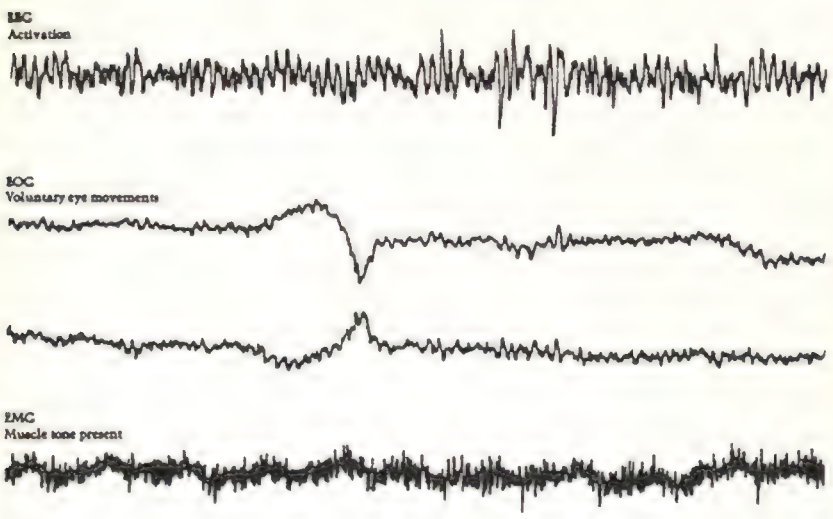
One virtue of the time-lapse technique is that it can be used in people's homes, as well as the laboratory, and useful data about a night's sleep can be stored on a single roll of film. Hobson's initial home studies, he reports, "have already revealed quantifiable interactions between the sleep of man and wife, between their presleep activity and subsequent sleep, and between their sleep and that of their pets."

Hobson's main interest is normal sleep, but he also envisions using the time-lapse technique to study the most common of all sleep problems, insomnia. Meanwhile, sleep clinics are pressing on with their deficit studies, looking at all the instances where sleep doesn't work properly.

The Stanford clinic, for example, is a flourishing enterprise that has had more than 1,500 patients in eight years. Its light-tight, sound-proofed rooms have been host to people suffering from a wide range of disorders, for sleep problems may be symptoms of many diseases, from epilepsy to schizophrenia, or they may occur with no obvious cause.

Fully half the Americans canvassed in a Gallup poll three decades ago said they had trouble sleeping—and nothing much has happened since to alter that figure except the jet age. Not all of these suffer from chronic insomnia, of course, certainly not to a crippling degree. But Dement estimates that more than 25 million Americans go to their doctors with it, and are usually prescribed sedative or hypnotic drugs—which may do more harm than good.

Here, modern sleep research has already made a sig-



Still awake, this volunteer at Harvard lab produces polygraph strip showing active brain-wave pattern (top row), voluntary movement of eyes (middle rows), and the normal activity of chin muscles (bottom).

A laser projection shows sleeper's brain waves in "Dreamstage" exhibit based on Harvard research.

nificant contribution. Clinical studies have revealed that some sleeping pills, particularly the barbiturates, not only lose their power after a few nights but can actually aggravate insomnia. Dependency on such pills is the most common contributor to insomnia in patients at the Stanford clinic, and they are often cured simply by weaning them off the pills.

On those rare occasions when none of us can get to sleep, aspirin may help, but the best advice is to get up and use the time for reading or reflection instead of working yourself into a frazzle. You may be just that much readier to sleep the next night.

In addition to an army of insomniacs, sleep scientists are beginning to suspect (from the stream of woozy victims pounding a path to their door) that untold millions more may be walking or stumbling around in the grip of a phenomenon known as EDS: Excessive Daytime Sleepiness.

EDS can stem from a surprising variety of specific, frequently subtle neurological irregularities. These can be enervating, often disabling, even life-wrecking.

For instance, a mild but persistent variation of the occasional violent leg jerk sometimes experienced on the edge of sleep can explode into repeated attacks every half minute or so at intervals all night long, eroding deep sleep without our conscious knowledge. Or, for unexplained reasons, we awake stiff, aching and feeling as tired as when we went to bed, a syndrome sometimes related to the intrusion of the small, fast brain waves of light sleep into the large, slow brain waves of deep sleep.

These two sleep maladies, known to doctors as nocturnal myoclonus and the nonrestorative sleep syndrome, can be detected by the sleep clinics' EEGs. Another, called pseudoinsomnia, can escape detection even by this means. In such cases hundreds of sleep-sapping, seconds-long "miniarousals" and a hounding sense of the brain racing endlessly in thought can leave us with a nightmarish feeling of never having slept at all—even when an EEG shows that we did.

And finally in the annals of nighttime exotica, there is the innocent-sounding neutral-state syndrome, a mysterious condition in which the victim suffers a night studded with "microwakes," and a day dotted with "microsleeps," lasting from ten to 60 seconds. A victim's automatic behavior, lack of attention and blackouts—like the symptoms of the other maladies—have no known cure. Like the others, such a hellish "idling" between the two states, never fully in or out of one or the other, is believed rare.

People who come to the clinic with these disorders may not be cured, but they can often be helped. The leg twitching of nocturnal myoclonus can be treated with muscle relaxant drugs for example. And simply having a likely diagnosis of what is wrong can relieve

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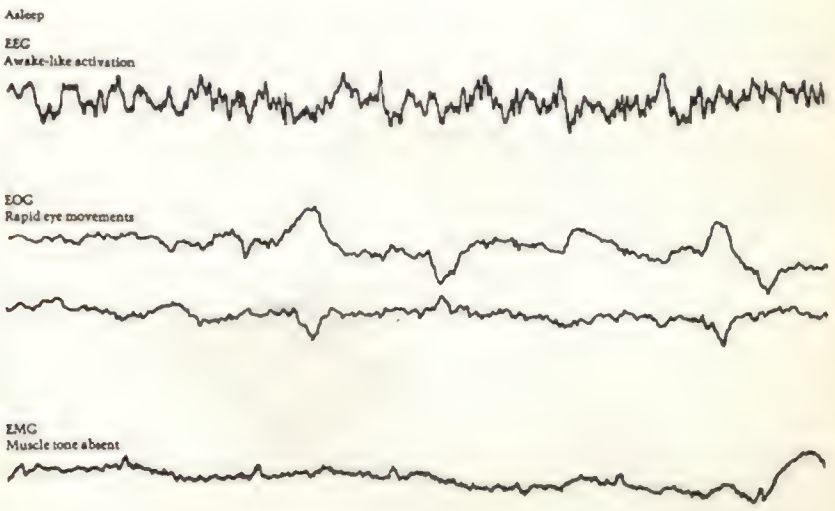

In REM sleep, when dreams occur, same volunteer's polygraph shows brain waves similar to waking state (top row), intense rapid eye movement (middle), and virtually no activity of chin muscles (bottom).

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A couple and a cat participate in research suggesting interaction between sleep cycles of people and pets.

at least some of the anxiety associated with unusual sleep problems.

Excessive daytime sleepiness can also result from two much more common disorders, narcolepsy and sleep apnea. Narcolepsy, which may be caused by an inherited central nervous system defect, afflicts its victims, while awake, with a sense of perpetual sleepiness and attacks of momentary paralysis known as cataplexy. The cataplexy seems related to untimely onslaughts of REM sleep. The paralysis normally accompanying REM sleep goes unnoticed at night, but its effect on a person who is awake can range from weakness in the knees to complete collapse that renders one, in a victim's vivid words, "a puppet whose strings have been cut." Narcoleptics can nod off over coffee and succumb to paralysis (which is triggered by any strong emotion) while making love.

Studies under way at UCLA may offer a clue to this condition. By inserting an exquisitely pointed hollow glass tube called a micropipette directly into a single neuron—20,000 of which could fit on the head of a pin—researchers at UCLA report they have found that the interior of the neuron becomes electrically negative the moment REM sleep begins. The change in electrochemical makeup prevents the neurons from discharging: muscles can't contract and limbs can't move. Writes physiologist Michael H. Chase, "We suspect that in cataplexy, the neurons that normally suppress or inhibit muscle activity during REM sleep begin to function during the daytime, with unfortunate consequences." To put it mildly.

Bill Baird, president of the American Narcolepsy Association in Stanford, California, points out the disruptive effects of the disease from his own experience. Symptoms of excessive daytime sleepiness appeared during his high school years. He was known then as an extracurricular whirling dervish—everything from varsity wrestler to class photographer—but, he admits now, he was just trying desperately to hide his sleepiness. Later, in the Air Force, he was almost court-martialed for repeatedly falling asleep while standing at attention. Neither Air Force nor civilian doctors could find anything wrong with him. He was 26 before his condition was diagnosed—and then he did it himself, after seeing a television program which mentioned the symptoms of narcolepsy. A doctor confirmed his guess, and prescribed a stimulant. Baird finally found himself functioning nearly normally, although he asks wryly, "How does a person whose wakefulness has been chronically impaired for 15 years *know* what it is to be normally awake?"

Now in his 30s, Baird believes there is no adequate treatment: no one is restored to normal function. He restricts his own worklife to running the association, a clearinghouse for information about narcolepsy. He subsists on pots of coffee and packs of cigarettes, and tries to avoid both strong emotions which can trigger paralysis and boring routines which can induce sudden bouts of sleep.

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county study, Baird estimates that there may be at least 250,000 narcoleptics in this country. Yet the disease has not received due recognition or research, he says. Currently Baird and his volunteer staff of fellow narcoleptics are seeking support for the care and feeding of Dement's dog colony at Stanford. The colony of canines, many of them related, appear to exhibit the classic symptoms of narcolepsy, providing a chance for research on its genetic transmission.

Dement's lab has a simple test for canine narcolepsy. Ten dog biscuits are placed in a row, a foot apart. A hungry dog is let loose at one end of the row. A normal dog will devour all the biscuits in less than 30 seconds. A narcoleptic dog, however, gets excited and suffers repeated attacks of momentary paralysis, its front or hind legs buckling as it attempts to reach the biscuits. Unfortunately, Dement has been unable to secure funds to expand the colony and build up research around it.

The diagnosis of sleep apnea, which can also produce excessive daytime sleepiness, fares a bit better. Dement tells about a desperate man who had been an insomniac for a quarter-century before coming to the Stanford clinic in 1972 as a last resort. Quite by chance the man mentioned that his wife complained of his loud snoring. As a result, a measurement of respiration was added to electrodes monitoring his sleep. In a book on his research Dement describes the result:

"We could not contain our astonishment when we found that the patient breathed *only when he was awake.* Watching the chart paper unfold, we stared open-mouthed as the patient fell asleep and stopped breathing for nearly one hundred seconds. Then, huge scribbles were inked on the respiration chart as he awoke to take gasping breaths into his air-starved lungs. This patient was unable to breathe and sleep at the same time. He had to wake up hundreds of times in order to get enough oxygen to survive the night."

Thus began research into obstructive sleep apnea, a strangulationlike stoppage of breath which if unchecked by tracheal surgery can lead to weakening of the heart and respiratory system and eventually death. Initially, obstructive sleep apnea was known as the "Pickwickian syndrome," for the Charles Dickens character Joe, the fat boy who always fell asleep on the job in *The Pickwick Papers.* Although the Pickwickian syndrome may favor the endomorph statistically, others are not immune. Such apneas, it soon de-

One of Stanford's narcoleptic dogs, a miniature poodle named Danielle, shows typical symptoms of disease: barking excitedly, she has sudden attack of cataplexy, drops to ground wide-eyed but paralyzed.

The Cadillac of Cars

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veloped, were not due to overweight, a complication at best, but to a strange muscle failure in the throat that shut down that vital airway, one perhaps caused by a chronically feeble or impaired signal from the brain's nocturnal "automatic pilot."

A similar disorder called central apnea results from a faulty signal between the brain and the diaphragm. Some researchers believe central apnea may be related to the mysterious "crib death," or sudden infant death syndrome. At Stanford, infants prone to this syndrome are receiving intensive nighttime observation at intervals during the precarious first year of life.

None of these horrendous conditions, it seems safe to say, would be recognized as true neurological diseases without the rise to popularity of the sleep clinic. Indeed, most doctors still have difficulty diagnosing such maladies. A random study of 235 referrals to Stanford revealed almost as many complaints of excessive daytime sleepiness as of insomnia—yet doctors had consistently misdiagnosed these daytime symptoms as resulting from hypothyroidism or hypoglycemia. The doctors themselves can hardly be blamed. They are victims of what the clinic staff likes to call sleep medicine's "Catch 22": It isn't taught in medical schools because medical boards don't test for it and medical boards don't test for it because it isn't taught in medical schools.

In any case, says Dement, people who complain of not being able to keep their eyes open should always be accorded a careful hearing and not dismissed as neurotic or given an open-ended prescription for a stimulant. They may urgently need treatment. They just might have yet another exotic—and crippling—anomaly of sleep. And each new discovery, added to the others, takes us that much closer to understanding the nature of sleep.

Like his co-workers, Dement's associate director, Marseilles-born neuropsychiatrist Christian Guilleminault, believes that sleep, far from knitting up the "ravell'd sleave of care," is actually sometimes dangerous to your health. "Increasingly it appears that we have three states of life—waking, slow wave sleep and dream sleep—each of which is controlled by, let us say, a different kind of computer program. The switch from one to the other may sometimes be inadequate and potentially dangerous because sometimes we may not adapt well.

"We have believed that during sleep our physiology was exactly the same as during wakefulness, but this is not true. Respiration rhythm, oxygen input, carbon dioxide output, chest distention, diaphragm position —all can be different. Generally, our temperature is lowest between 2 and 4 A.M., highest at 2 P.M. for people who sleep normal hours. Secretion of gastric juices and hormones, to name just two, vary with time.

"Furthermore," Guilleminault points out, "you go to see a doctor when you are awake, with an awake, functioning body. All the tests he does on you are when you are awake. Nobody will know from them what your situation is while you are asleep."

Given evidence of such significant diurnal changes, many sleep researchers now lean toward one variation or another of the "pacemaker theory" of sleep. It posits the existence of brain cells that oscillate at different frequencies, either near-circadian (circa: about; dian: day) or consonant with the day-night cycle, to govern the rhythmicity of the many organic cycles—some as yet only guessed at—that converge in the creation of sleep. Seen from that perspective, sleep becomes less a thing than a time. Or as Dement's colleague, Psychologist Merrill M. Mitler, likes to put it, "the question *what* is sleep becomes the wrong one. It's like asking, 'what is the function of 11 P.M. to 7 A.M.?' " Sleep, he says, may be simply a confluence of biochemical and behavioral events that coalesce at a certain time in our day.

Withal, we cannot escape the sneaking certainty that sleep, for all its ephemerality, must do *something*. Allan Rechtschaffen, director of the University of Chicago sleep laboratory, noting that sleep precludes most useful activities, from hunting and eating to procreation and self-defense, has written what for the moment must be considered the final word on the riddle of sleep: "If sleep does not serve an absolutely vital function, then it is the biggest mistake the evolutionary process has ever made."

Time-lapse photographs (taken every seven-and-a-half minutes) document night's sleep of man and cat, revealing the periods of motion and of immobility.

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Two sides of Louis Eilshemius' art, *East Side, New York,* 1908, above, and *Afternoon Wind,* 1899, right, the subject matter of which, if not his best work, is his most famous.

By Paul J. Karlstrom

Eilshemius' pursuit of fame: a tragic story

A gifted and eccentric painter, a casualty of the creative life, is given a major showing, at last, at the Hirshhorn Museum

Toward the end of his life, Louis Michel Eilshemius said of himself, "I'm ten persons in one, but I'm a hard-luck fellow." Certainly the second part of this self-description was, for once, no exaggeration. Although history records other artists who were destroyed by their chosen profession, Eilshemius' example is particularly poignant. Part of his tragedy came, no doubt, from a lack of emotional resilience which prevented his withstanding the worst consequences of the creative life. It may have been that in the beginning he would have been satisfied with a modest success along academic lines, but Eilshemius made the fatal error of measuring success exclusively in terms of public acclaim. By the time he was catapulted to prominence in the early 1930s, fame had tarried too long, and apparently no amount of attention could heal the deep wounds inflicted by years of neglect.

Eilshemius was basically a traditionalist whose individuality was the natural result of a powerful imagination and a personal vision that could not be denied. The irony is that he was finally rescued from oblivion

by those whose esthetic values were radically divergent from his own. His "discovery" in 1917 by Dadaist Marcel Duchamp and other representatives of the New York avant-garde may be the best known, and heretofore most "respectable," aspect of Eilshemius' career. The fact is that Eilshemius was adopted—not unlike the way Henri Rousseau had been by Picasso and others of the French avant-garde—as a mascot. He embodied, it seemed, values that had become central to current modernist ideas of creativity: spontaneity, lack of sophistication and training, and direct expression of subconscious activity. Duchamp was joined in his support by Joseph Stella, Abraham Walkowitz, Gaston Lachaise, Charles Demuth and others with similar interests. Whatever virtues they may have recognized in Eilshemius (and it would be difficult to overlook the exhilarating lyricism of his color), they valued him primarily as a symbolic tool in modernism's continuing assault on traditional values.

It began when, at 53, Eilshemius submitted a couple of recent works to the unjuried exhibition of Independent Artists. Duchamp proclaimed one of them, *Supplication,* to be one of the only two significant entries in the show. Largely through Duchamp's efforts, Eilshemius was given a one-man show in 1920 by the progressive Société Anonyme. The hostility with which this show was greeted broke Eilshemius' spirit: shortly thereafter he put up his brushes forever. But a second Société exhibition in 1924 (selected from the artist's less eccentric middle period) enlisted the support of several influential critics, and Eilshemius was on his way.

But, as rapidly as it had risen, Eilshemius' public reputation subsided. Despite a number of exhibitions over the following years, and the faithful support of enthusiastic collectors such as Duncan Phillips and Joseph H. Hirshhorn, his position in American art was far from secure. A 1959 retrospective at the Coop-

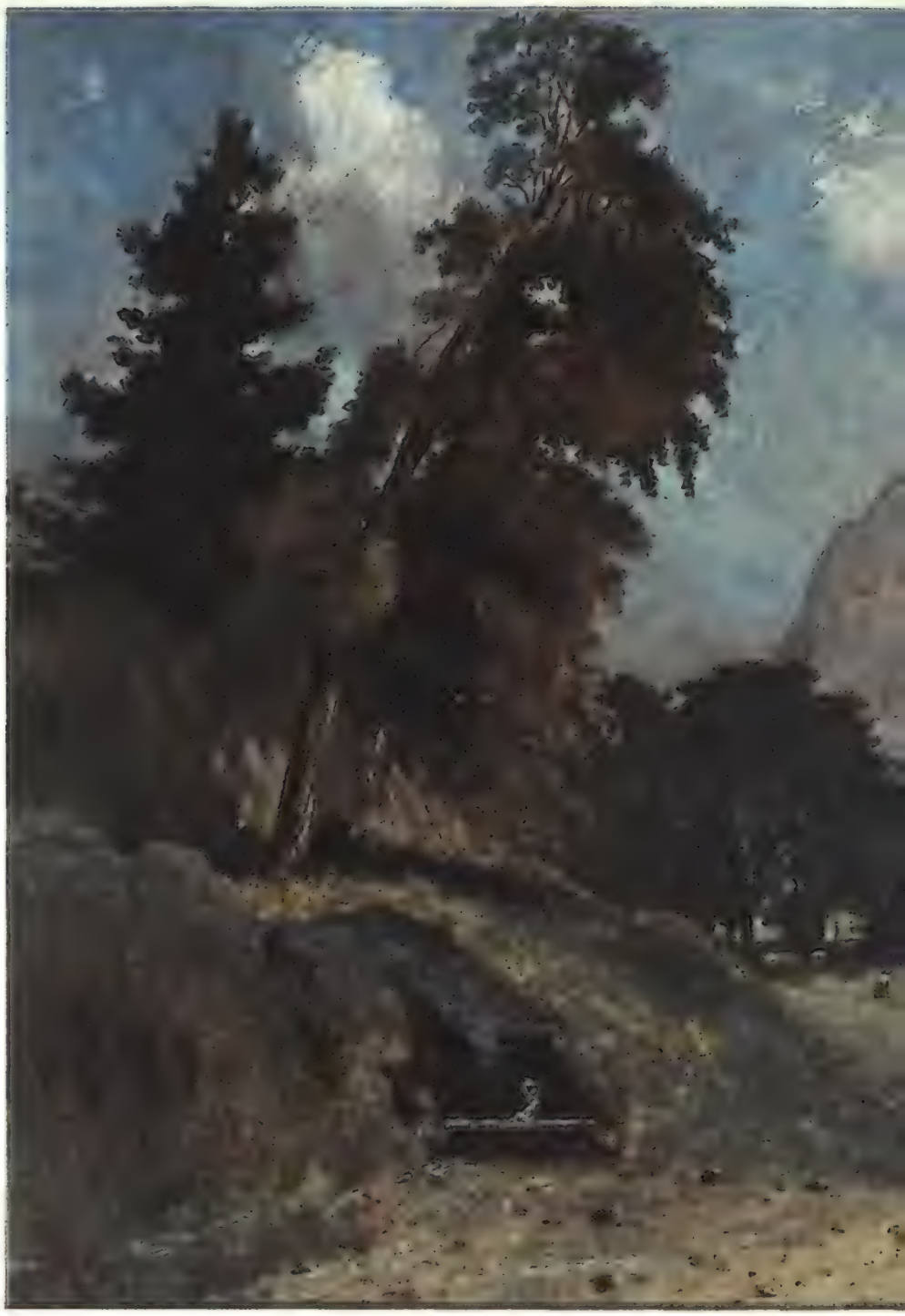
Mr. Karlstrom, West Coast Area Director, Archives of American Art, wrote Louis Michel Eilshemius, *published this September by Harry N. Abrams, Inc.*

erative Artists' Gallery in New York did little to change the situation.

This fall, 37 years after the artist's death, attention will be focused upon him as it has not been since the late 1930s. His first major museum retrospective will open November 9 at the Hirshhorn Museum and Sculpture Garden in Washington, where it will be shown through January 1, and then will circulate for two years under the auspices of the Smithsonian Institution Traveling Exhibition Service (the Herbert F. Johnson Museum of Art, Ithaca, New York, February 3-March 18; Joslyn Art Museum, Omaha, June 23-August 19; Springfield Museum of Fine Art, Springfield, Massachusetts, September 29-November 11; Frederick S. Wight Gallery, UCLA, Los Angeles, December 8-January 13, 1980; and the De Young Museum, San Francisco, February 1-April 1).

The show includes more than 80 examples of the artist's work, all drawn from the extensive holdings of the Hirshhorn Museum, and provides an unprecedented opportunity to study less familiar as well as the better-known aspects of Eilshemius. Many who know the artist only through his more bizarre subjects, awkwardly painted in the so-called "primitive" manner that first brought him attention, may be surprised to see early drawings and watercolors of great delicacy and sensitivity. These, together with the early landscapes, present a facet of the artist that is too often ignored. The best of the landscapes are truly splendid examples of late 19th-century American painting in the then-prevalent Barbizon-inspired manner.

Perhaps the most striking feature of Eilshemius' development is the dramatic shift from this charming and conventional late 19th-century landscape manner to the eccentric, melodramatic and frequently disturbing subjects and idiosyncratic style of the later period. The work seems to be divided into two major groups,



A poetic evocation in the traditional style he could employ so well, *Peaceful Vale*, 1907, is based on a Spanish landscape and

Collection of Dorothy Franklin

AN UNUSUAL INVENTOR IS

LOUIS MICHEL EILSHEMIUS, M.A.

Educator, Ex-Actor, Amateur All Round Doctor, Mesmerist-Prophet and Mystic, Reader of Hands and Faces, Linguist of 5 Languages, Graphologist, Dramatist (7 Works), Short Story Writer and Novelettes (26 Works), Humorist Galore, Ex-Mimic, animal voices and humans, Ex All Round Athletic Sportsman (to 1889), Universal Supreme Critic. Ex Don Giovanni, Designer of Jewelry etc., Spiritist, Spirit-Painter Supreme, Best Marksman to 1881, Ex Chess and Billiard Player to 1909, Scientist supreme: all ologies, Ex Fancy amateur Dancer, The most rapid master creator in the 3 Arts, Most wonderful and diverse painter of nude groups in the world. Travelling salesman—in 30 cities on 30 nights, Philanthropist, Saved 20 lives—3 from suicide, Greatest Religionist, Globe Trotter, Half the Globe, Western.

His middle name is "Variety". All the supreme Genius Minds down the ages find Domain in

EILSHEMIUS

Born 1864 near Newark, N. J.

on a poem by the artist himself. Below is his *Three Bathers*, 1918, an important example of his later, idiosyncratic style.

Hirshhorn Museum and Sculpture Garden

with the transformation taking place around 1910. The crucial question in connection with Eilshemius is what brought it about. Even allowing for a reluctant response to the impact of modern painting and to other external esthetic influences, it is clear that the answer lies in the unusually direct connection between his life experience and his art.

Eilshemius' personal history constitutes one of the most interesting and pitiful stories in American art. Born in 1864 to wealthy and socially prominent immigrant parents at the family estate near Newark, New Jersey, his beginnings were privileged and auspicious. After a period at Cornell University, Eilshemius overcame his father's predictable objections to a career as a painter and enrolled at New York's Art Students League. From there, like so many aspiring young American artists, he went on to Paris and the crowded, smoke-filled classrooms of the Académie Julian. Eilshemius dutifully followed a path that promised a successful academic career. His earliest paintings, reflecting the influence of Camille Corot and George Inness, placed him well within the context of contemporary American art—the native landscape tradition qualified by a conservative, tonal response to Impressionism; and he was rewarded by the acceptance of landscapes by the National Academy of Design for its exhibitions in 1887 and 1888.

This official recognition, apparently so promising, had to sustain Eilshemius for the remainder of his active career. His subsequent entries were rejected, and he continued to work for three decades without further encouragement. This involuntary isolation ultimately destroyed him. But there is no question that this very isolation, with the psychological effect it imposed, is largely responsible for the full emergence of Eilshemius' distinctive artistic personality. As the years went by, the artist must have realized that he

was, indeed, painting himself. In a profound way, Eilshemius' paintings became entries in a personal diary, the pages of which graphically document the fears, fantasies and obsessions of a tormented soul.

Try as he might, he could not seem to establish lasting friendships, and his efforts to attract and win the favors of young women were equally and pathetically unsuccessful. This devotee of the female form, whose paintings of nude women may number as many as one thousand, this expert observer who claimed to know his subject so intimately that he should have been a doctor, never married and perhaps never enjoyed a satisfying relationship with a woman.

It is, in fact, in the nude figure paintings that the autobiographical current surfaces most tellingly. The endless progression of nymphs—cavorting in landscapes, bathing in pools, posing in interiors that suggest the activities as well as the appearance of a brothel, and even floating in the air—inhabit an exclusively female world created by Eilshemius as a substitute for unfulfilled experience.

Of course, Eilshemius' work was not exclusively devoted to or motivated by women. His was a fundamentally romantic sensibility that led him to explore the full thematic catalog of late 19th-century art. This quest also led him to travel extensively, a luxury he could indulge, thanks to the generous inheritance he received upon his father's death in 1892. During the following decade, the artist set off on a series of expeditions in search of his "Muse." His journeys took him several times to Europe, to North Africa in 1892 and even, during the winter of 1901-02, to Samoa and the South Pacific. The compositions painted several years later in response to the Samoan sojourn rank among Eilshemius' most impressive works. Certainly the years during which they were done, 1907-08, mark the period of his greatest productivity and highest level of achievement. By this time, after a brief and unsuccessful residence in Rome in 1903, Eilshemius had decided to settle down in New York where he spent the rest of his life. The resulting views of New York City take their place with the Samoan paintings as among his greatest accomplishments.

Eilshemius sustained this remarkable level of creative activity up until about 1910. In addition, he published at his own expense a number of volumes of poetry, prose and musical composition that, though in quality far below the level of his paintings, express a charmingly old-fashioned romantic sensibility. But the sense of isolation that had been growing over the years finally affected his work and public behavior. He began to distribute his shamelessly self-laudatory handbills (p. 101).

In 1911 Eilshemius' mother died, and this year seems to mark the crucial shift in his art. It may be that in the year following her death he painted nothing whatsoever; it is certain that fantasy and unreality became much more pronounced in the years afterward and, in many cases, technical ability deteriorated lamentably. Always an uneven artist, he had even more difficulty in maintaining consistent quality. In 1911 he also introduced the decorative "painted frame" that reinforces a sense of artificiality in his later work and, appropriately, to our eyes suggests a television-image world. The work of the period after about 1913, the year Eilshemius resumed the proper spelling of his name after signing "Elshemius" since 1890, is characterized by rapid and direct application of paint, broad handling, arbitrary color and the substitution of cardboard for canvas. He increasingly turned to whatever support material was available, including music sheets and cigar-box tops. Although the largest paintings of his career were done during

When canvas was too costly, Eilshemius would turn to whatever was at hand, here a cigar box lid.

Despite his gift of 183 Eilshemiuses to the nation in 1966, Joseph Hirshhorn still has one of the largest private collections of his work, part of which is seen in his home. Box-lid painting is over chair at right.

Joseph H. Hirshhorn Collection

The underside of the lid contains a perfectly realized painting in miniature, the scale of which in no way diminishes its luminosity, played against dark areas as he portrayed his private world.

An automobile accident in the 1930s confined the artist to a chair in his cluttered quarters.

this period, among the most successful were just such modest productions as the two figures on the reverse of a LA YEBANA cigar box top (p. 103).

After Eilshemius stopped painting in 1921, he devoted himself to self-promotion and (whether intentionally or not) the cultivation of his eccentric Bohemian image. By the late 1930s virtually everyone in the New York art world knew of Eilshemius. Many, including friends like the Milton Averys and Joseph Stella, visited him regularly in an attempt to bring some warmth and fellowship into his lonely life. Similarly, Alfred Stieglitz addressed extremely kind and encouraging letters to "My Dear Friend and Master."

But by this time Eilshemius' condition had tragically deteriorated. As the result of being struck by an automobile in 1932, he was confined to a chair for the rest of his days. His room in the family brownstone on East 57th Street was described as a perfect Victorian chamber, gaslit, with Oriental carpets on the floor and paintings strewn everywhere. As the years passed and visitors climbed the stairs and descended, often with paintings under their arms, the room was slowly emptied of the results of a lifetime's labor.

This generally unkempt and apparently demented old artist, who alternately mumbled and shouted curses at a world too slow in recognizing his greatness, and whom some authorities were indeed hailing as an authentic American genius, provided journalists with better copy than they could have fabricated on their own. Unfortunately, the numerous articles bringing further attention to the self-styled Mahatma did nothing to alleviate his desperate circumstances.

With the family fortune long ago exhausted and the house heavily mortgaged, there was not even money to pay the faithful servant who nevertheless continued to care for Eilshemius and his brother Henry, often buying food from her own savings. Despite efforts on his behalf by his biographer, William Schack, and other friends, Eilshemius was on the whole treated disgracefully. Even the dealers who were by now selling some of his pictures refused to help. Shortly before his death, Eilshemius appealed in despair to his dealer, Valentine Dudensing: "My brother Henry died last week. I am all alone, My funds are over."

Penniless, bitter—and famous—Eilshemius died of pneumonia on December 29, 1941, 12 days after his removal to the mental facility at Bellevue Hospital. His funeral was attended by a distinguished group of artists, critics, writers and museum professionals—the very company to which he had so ardently sought admittance since his return from Paris.

Of the 3,000 or more works Eilshemius left to us, the majority are stamped by an unmistakable personality that sets them well apart from the work of his contemporaries. Eilshemius' art, like that of Albert Pinkham Ryder, with whom he has so much in common, is subjective and metaphorical. And the enjoyment of it depends upon a willingness to suspend disbelief—and frequently gravity—entering with the artist into the enchanted realm of his fantasies. This imaginative landscape is occasionally disturbing, but more often it is playful and lighthearted, animated by a healthy measure of conscious humor. It may be this element of playful fantasy that is overlooked by—or, in its more bizarre manifestations, unacceptable to—Eilshemius' severest critics.

But the role of visionary art, and its contribution, is to remove us by whatever means the artist has at his disposal from a world conditioned and circumscribed by the limitations of everyday existence. In this, Eilshemius at his best has been successful. His gift to the viewer is an invitation to participate in, or at least eavesdrop on, a dialogue between a remarkably unsophisticated soul and his imaginative creations.

A dramatic and mystical rendition of *Macbeth and the Witches*, 1908, was painted after a visit to that other visionary artist, Albert Pinkham Ryder.

Worcester Art Museum, Massachusetts

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VOLKSWAGEN DOES IT AGAIN

With tools of his trade, Théodore Géricault, France's first great romantic painter, surveys summer scene.

By Robert Wallace

The elegies and enigmas of romantic Père-Lachaise

Bosky retreat of Louis XIV's confessor is host to Parisians and tourists who pay homage or frolic among tombs famous and infamous

There is a hillside in the east of Paris to which a steady stream of pilgrims makes its way, winter and summer. They go seeking Géricault· (above), Proust, Bizet, Sarah Bernhardt, Delacroix, Rodin, the Rothschilds, Gertrude Stein and Alice B. Toklas, among others. And they are all there, in what is doubtless the most interesting cemetery in the world—Père-Lachaise.

Several of the tombs are famous only in a local sense. The occupants are not widely known and in some cases quite unknown. Rounding a corner, the visitor comes upon a recumbent man holding in his hands the detached head of a lady, presumably his beloved (see cover). There is no identification on the tomb, merely the enigmatic inscription: "They were filled with wonder at the beautiful journey that led them to the end of life." There can be different interpretations of this, but, as the intentions of the purchasers of the lot are not open to public prying, no one can say which is the right one.

The grave of far from anonymous Oscar Wilde should be easy to find. The custodians at any of the gates will provide a map and after a little walk the visitor can locate the grave in Division 89 of Sector One. But unless he has great singleness of purpose he may not get there on his first attempt. The map also indicates the resting place of Murat, Musset, Colette, Ingres, Corot, Daumier, Balzac, Modigliani and Edith Piaf, to name only a few, and by the time of the ringing of the closing bell the visitor is likely to find himself far from his destination.

But let us assume that he is persistent, not to be distracted, and goes directly to Wilde's tomb. There are remarkable things about it. One is the startling memorial sculpture of a winged sphinx by Sir Jacob Epstein (p. 112). Another is that the sculpture has been mutilated. According to the French writer Michel

Géricault, who died of a fall from one of the horses he loved to paint, is mantled with winter's snow. His was a seminal influence on such disparate painters as Delacroix, Courbet, Millet and early Impressionists.

Dansel, "two English ladies walking in Père-Lachaise could not control their indignation when they saw the representation with unmistakable male attributes. The ladies took some stones from the border of the walk and broke off the testicles. The guards took these valuable fragments to the office of the conservator, where for two years they served as paperweights."

Wilde's tomb, although it attracts many students of English literature, homosexuals and ordinary tourists who have heard about the unfortunate mutilation, may not be the most-visited in Père-Lachaise. Piaf's appears to be more popular, as does that of Allan Kardec, the "pope of spiritualism," sought out by thousands of people who hope somehow to find help in communicating with the dead. In a city that has become as expensive to visit as has Paris in recent years, a trip to Père-Lachaise is more than a good bargain. There is no admission charge. Summer and winter, as its monuments glow in the sun or are transformed by mantles of snow, visitors—now about half a million a year—may be seen walking thoughtfully along its tree-lined allées.

In contrast with Westminster Abbey, which has been a resting-place for England's great men and women at least since 1066, when Edward the Confessor was buried there, Père-Lachaise has been in operation for a little less than a century and three-quarters. It has achieved its eminence largely through two circumstances: there was an appalling need for a new cemetery in Paris at the time of its founding, and its first director was a promoter of rare skill.

Toward the end of the 18th century, the principal burying ground of the city, the Cimetière des Innocents, was 800 years old and had received the bodies of some two million people in a space that measured only 131 by 65 yards. This human compost heap was 30 feet deep and extended seven feet above the ground. In 1780, in a catastrophic landslide, the walls of an entire apartment block adjoining the cemetery gave way and 2,000 corpses slid into the cellars, giving off a stench that well-nigh asphyxiated the residents above. It was clear that new arrangements were urgently re-

Free-lance writer Robert Wallace's article on Barbary wars appeared in SMITHSONIAN *in January 1975 and his account of Grand Canyon rafts in May 1974.*

Photographs by Dmitri Kessel

quired. But the turmoil of the French Revolution and the establishment of the Napoleonic Empire precluded the opening of Père-Lachaise until 1804.

The administrator of the new cemetery was Nicolas Frochot, Prefect of the Seine, who chose, on the eastern edge of Paris, a hilly, breezy, pleasant site that had once been the country retreat of François de la Chaize, a Jesuit priest who served as confessor to Louis XIV from 1674 until 1709. The name of the priest and his association with the Sun King carried weight among the French *haut monde,* the sort of people Frochot hoped would buy lots in his cemetery, and so Père-Lachaise the place became. But, unhappily, Frochot's first customer, a police commissioner's errand boy, lacked the stature to entice the rich and famous to await the Last Judgment in his company. It was necessary to provide better attractions. Accordingly, Frochot seized upon a state museum full of handsome sepulchers, statues, monuments and other stonework that had been confiscated from the aristocracy during the Revolution and scattered these objects strategically in his unfurnished graveyard.

Frochot also negotiated with a museum for the supposed bones of two 17th-century French writers, Molière and La Fontaine, and installed them in Père-Lachaise. These were not, it turned out, the actual remnants of the great men, but at least they were reputed to be and they lent a good deal of cachet. And in 1806 Frochot scored a larger triumph. In that year, workmen demolishing the old convent of the Capucines near the Place Vendôme came across the casket of Henri III's queen, Louise de Lorraine.

Quickly, Frochot had it transferred to his cemetery. A decade later, when the restoration of the French monarchy had much increased the value of royal bones, Frochot was able to make a brilliant swap. He traded Louise for the remains of Héloïse and Abélard. The famous lovers, dead since the 12th century, had been six times torn apart and six times reunited. Frochot placed them together beneath a reconstructed Gothic canopy in Père-Lachaise, where they repose today. After this coup there was little need for him to engage in further trading; the high tone of the cemetery's clientele had been set.

Frochot himself was willing to be buried there, as in due time he was. (Jacques Baron, from whom Frochot got the land in 1803, had the privilege of buying back three square yards 19 years later at a rate 272 times his selling price.)

There has been little importing of remains in this century, with the notable exception of Wilde's. On his death in Paris in 1900 he was hustled into an inexpensive grave at Bagneux and it was only in 1909, through the courtesy of an anonymous English lady, that he was

Starkness of monuments to novelist Marcel Proust, actress Sarah Bernhardt and Gertrude Stein gives no clue to their genius and unconventional eccentricities. Burials of all three drew luminaries of their times.

moved to Père-Lachaise and Epstein's sculpture was put up. Wilde apparently did not think much of posthumous wanderings of any sort—he once remarked to his lifelong friend Robert Ross: "When the Last Trumpet sounds, and we are couched in our porphyry tombs, I shall turn and whisper to you, 'Robbie, Robbie, let us pretend we do not hear it.' "

Once it had been established that a tomb in Père-Lachaise was a status symbol of more or less permanent nature, Frenchmen became interested in buying space there. Writers of prose and poetry, actors, composers, generals, inventors, merchants and bankers came to the cemetery in large numbers. Even Napoleon, in exile on St. Helena in 1819 and having no idea that he would eventually rest in a great tomb in Les Invalides, expressed the hope that he might lie in Père-Lachaise. Year by year the number of burials increased until, by 1978, there had been one million.

(Noting an old Parisian custom of prescribing the pleasures of the table as the best antidote for bereavement, an 1841 guide to the neighborhood observed that "after shedding many tears" on the graves of loved ones at Père-Lachaise, mourners tended to head for a nearby tavern named Mieux Ici Qu'en Face ["Better Here than Across the Way"] and seek surcease in a glass of wine. "If this manner of consolation is not exactly in harmony with the respect which one owes to the dead," the guide added, "it is in perfect accord with the frivolity of the Gallic temperament.")

There are few restrictions on the sort of monuments that may be erected. The competition for attention is brisk. There are vertical, reclining and kneeling sculptures of the deceased. There are obelisks, pyramids, ziggurats, small basilicas and Gothic cathedrals, altars, sarcophagi and columns, many of them adorned with stone owls or, here and there, dogs. The tallest monu-

All Saints' Day tributes inundate grave of Frédéric Chopin, whose heart is buried in Warsaw. Muse is by son-in-law of Chopin's mistress George Sand; two of her other lovers, Musset and Merimée, lie nearby.

These are graves of painter Amadeo Modigliani and mistress (a suicide the day after he died), singer Edith Piaf and novelist Honoré de Balzac, whose bust watches over Paris from Père-Lachaise's heights.

ment is a lighthouse-shaped tower nearly 300 feet high, erected in 1828 by a relatively obscure but rich man named Félix de Beaujour. Because he feared that the cemetery trees might grow tall enough to cover his name, he had it carved halfway up the side. By far the most numerous of the monuments, however, are small mausoleums, thousands of which stand side by side along the paths.

M. de Beaujour was right about the trees. Père-Lachaise is beautifully planted with about 12,000 of them, including American black walnuts, elms, sycamores, planes, beeches, cypresses, cedars, cherries and a dozen other species which in summer cast a cool shade along the allées. Blackbirds, woodpeckers, nightingales and doves flit among them, keeping a wary eye out for the swarms of cats. As a fair estimate about 400 of them are permanent residents, sleeping in the tombs and being fed by visitors who come every day for the purpose. On warm days the cats may be seen everywhere, slumbering on the monuments to the dancer Isadora Duncan, the Dominican dictator Rafael Trujillo, the composer Francis Poulenc or even the mausoleum of the great banking family of Rothschild. Cats, especially French cats, are none too reverent. When a funeral procession passes, they merely open their marigold eyes, blink and resume dozing. They appear to have their own territories—one student has divided them into the cats of generals, the cats of authors, the cats of musicians, and so on.

Perhaps the most interesting dimension of the natural history of Père-Lachaise is the living, human one. A good many people go there not to mourn, not to see the graves of such authors as Michelet or Merimée, but on personal errands. After a good, soaking rain has brought the escargots out into the open, hunters may sometimes be seen among the tombstones picking up the succulent mollusks, either to take home for

Ostracized in England after imprisonment, Wilde lived in Italy, died in Paris. His poem, *The Sphinx*, inspired this monument, which was vandalized.

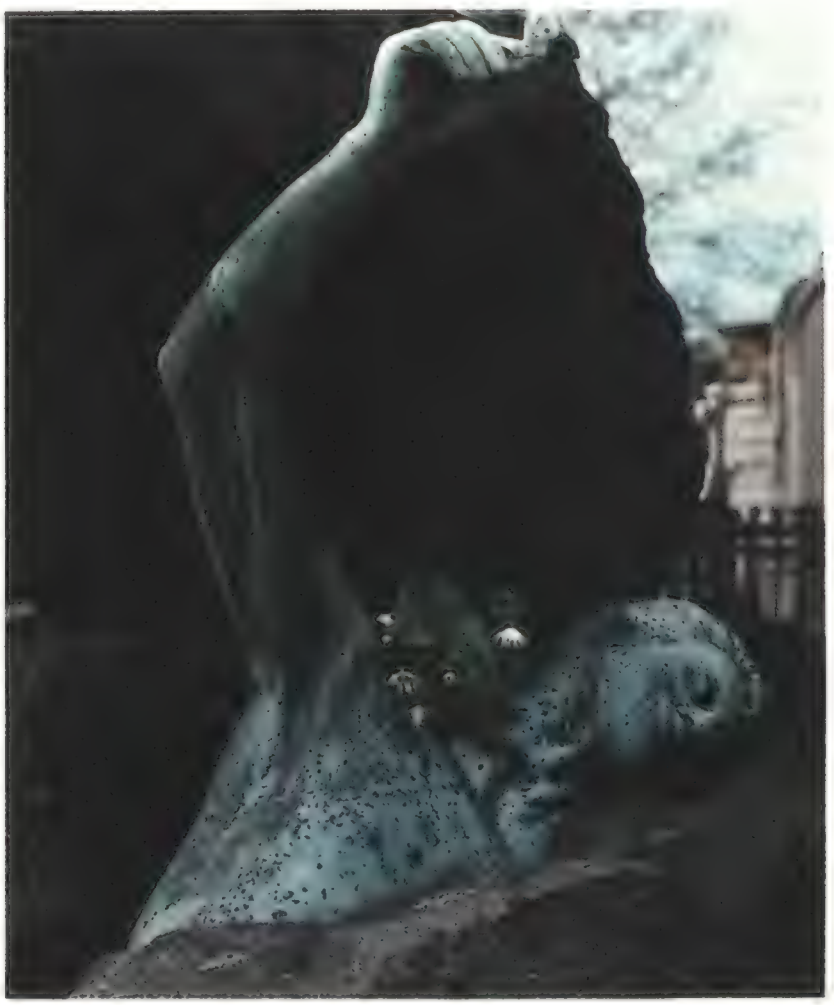

Figure of man escaping grave while brandishing rose adorns tomb of Belgian poet Georges Rodenbach.

dinner or to sell to restaurants eager to have them.

Young lovers, especially girls of tender years whose parents keep a tight rein on them and who have scant opportunity for unsupervised conversations with boys, often arrange for hasty meetings in Père-Lachaise. What could go wrong in a cemetery? Actually, a good deal. The English poet Andrew Marvell, who held that "The grave's a fine and private place, but none, I think, do there embrace," may have been mistaken. There are numerous tombs in Père-Lachaise with missing or unlocked doors.

Young people, or indeed older folks with common interests who have some reason for not using the telephone or the mails, may leave messages for each other in the cemetery. Two people who are united in their respect for Frédéric Chopin, for example, may deposit small notes in crevices in or near his monument. Engineering students may choose the tomb of Ferdinand de Lesseps, builder of the Suez Canal, as a mailbox. Youths who are fond of rock music may select the resting place of Jim Morrison, who died in 1971. Morrison was leader of "The Doors," and around his grave may

Cino del Duca made a fortune publishing romance magazines, all the rage with shopgirls of Paris.

As attested by shine on her bronze breast, youthful dulcinea with fallen torch has been viewed as a talisman by generations of enraptured passers-by.

In Paris to be married, journalist Victor Noir, a Bonaparte critic, was shot by Napoleon's cousin.

be found warmly inscribed photographs of young ladies, love notes, locks of hair and the persistent odor of pot. His admirers also leave unimaginative and illiterate graffiti on nearby tombstones.

There are monuments of obscure people that have assumed more than usual stature. It is no good to turn away from them. Michel Dansel tells of the particularly striking bronze of a young lady whose lips and breasts are exposed to the vagaries of the seasons "as well as to the caresses, kisses and other effusions of even the most distinguished visitors." The young lady's figure (page 113) has been unusually polished by these attentions. Anyone who has had experience with polishing bronze will realize that a good deal of persistent effort has been involved.

Some of the epitaphs in Père-Lachaise are extremely moving and can fetch an observer to a stunned halt. The monument of a French officer killed in World War I admonishes his wife not to forget him should he die in battle. Beneath this was written, more than 40 years later, "I remember."

Other epitaphs are self-serving. Most of the people buried in Père-Lachaise were not famous. Many hoped to compete with Chopin or Balzac by setting out long lists of their qualifications: "Chief of the Central Service of Statistics and Documentation of the Ministry of Public Works . . . Assistant Chief of the Ministry of Finance . . . Lawyer . . ." and so on and on.

Still other epitaphs were written by the poets who rest beneath them, such as Guillaume Apollinaire, who was not only a poet but a brilliant art critic—he was an early defender of surrealism, a term that he invented.

A few of the tombs are almost always surrounded by flowers. The grave of the spiritualist, Kardec, has its bouquets winter and summer, and during visiting hours one or two of his devotees can usually be seen

Under bright canopy of autumn leaves, mausoleums, like silent sentinels, line gracefully curving allée.

Pathos inherent in the death of a child is reflected in this statue of nine-year-old boy with his dog.

hovering nearby. Indeed there are visitors in the middle of the night as well. True believers sometimes ignore the closing bell to remain near Kardec in the dark, when they insist that the eyes of his bronze bust may be seen to open and close.

Unlike Kardec's, many tombs are rarely decorated and seldom visited. One could easily fail to notice the grave of the animal trainer Pezon, who was eaten by a lion and whose monument represents him as cheerfully riding astride the beast, little anticipating the unhappy event that caused his death. Or one might not pause at the tomb of Marguerite Saqui, one of Napoleon's mistresses, whom he called "my madwoman." She once danced on a tightrope strung between the towers of Notre Dame. It requires an experienced guide to point out these and other matters of interest, including the military history of Père-Lachaise. Most Parisians are well aware that two battles have been fought within the cemetery, although foreign visitors as a rule are not.

In 1814, as the Allies closed in on Napoleon, the young cadets of two French military schools entrenched themselves in the cemetery and tried to beat off an assault by a strong force of Russians. The cadets

Serenity and tenderness mark poignant marble carving of a 21-year-old mother and her baby.

were overrun and the Russians then set up camp, felling many of the trees for firewood.

In 1871, during the civil uprising that followed France's defeat in the Franco-Prussian War, hundreds of Communards took up positions in Père-Lachaise. There, with 11 artillery pieces with which they could fire on the Louvre and the Palais-Royal, they made a last stand against French Republican troops. For four days counterbattery fire whistled into the cemetery, shattering the tombs, and then a force of Republican marines burst in to finish off the Communards. Some 700 men and women were killed. The next day another 147 were lined up against the bullet-pocked eastern wall and executed by firing squads. Memorial wreaths mark the place, hallowed by Frenchmen of all political persuasions but particularly those of the left. A century after the event, the grave of Adolphe Thiers, interim head of the Republican government who ordered the suppression of the Commune, was still being desecrated with such graffiti as "Assassin of the people" and "Chief of the dogs and pigs."

There are impressive memorials to the dead of more recent conflicts, including monuments commemorating the heroes of the Resistance in World War II and the victims who died in German extermination camps. The gaunt, bronze figure of a man suspended against the sky (opposite), symbolizing those who died at Oranienburg and Sachsenhausen, is perhaps the most powerful piece of sculpture in Père-Lachaise and often moves visitors to tears.

It is not, indeed, easy for any thoughtful visitor to walk through Père-Lachaise and remain unmoved. If he is at first diverted by the pomposity, oddness or obtrusiveness of some of the monuments, he will soon change his mood. The roster of so many illustrious figures cannot fail to leave him in awe of the contribution of such people to the greatness of France, and of the gifts of France to the world.

Despite strict prohibition against feeding animals, old ladies smuggle baskets of food into Père-Lachaise to sustain 400-odd cats who, on to a good thing, wouldn't live anywhere else.

Powerful and attenuated memorial to victims of Nazi concentration camps seems to rise heavenward, escaping its barbed-wire prison, above luminous cross formed by the refracted rays of a winter sunset.

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Edward S. Ayensu

Calling the roll of the world's vanishing plants

New international Red Data Book *reveals how grazing, logging, development, pollution and other pressures could doom many species*

Now-famous Furbish's lousewort is threatened by proposed dam on St. John River (background), but careful conservation measures may yet save it.

While the plight of endangered creatures such as blue whales and whooping cranes is widely appreciated, it is less well known that from 20,000 to 25,000 of the world's *plant* species face extinction. Today botanists are trying to locate, identify and protect these species; it is an enormous task, complicated by considerations involving law, land use, economics and large doses of human emotion. In many parts of the world the flora is so little known that the exact status of a given plant is difficult to determine. In 1973, at an international conference on endangered species, some countries, out of national pride, proposed for endangered status native plants that proved to be common, even weeds; rectifying this situation at later meetings involved delicate diplomatic maneuvering.

More recently, the International Union for the Conservation of Nature and Natural Resources (IUCN) appealed to botanists around the world to supply accurate information about endangered species in their countries. The IUCN's Threatened Plants Committee, of which I am the chairman for North America, has assembled these data for a new publication to "highlight the growing and continuing threats to the world's natural ecosystems and the diversity of species they contain." This *Plant Red Data Book* is being prepared in London by the secretary of the Threatened Plants Committee, Grenville Lucas, and should be available by the end of the year. Although it will cover only 250 of the thousands of species the IUCN feels need protection, these species include some of the plants that are in the gravest danger, or are particularly spectacular, useful or interesting.

The plants listed in the book have become endangered for a wide variety of reasons—overgrazing by domestic or feral animals, herbicide spraying, fires, cutting for timber or firewood, damage by off-road vehicles (SMITHSONIAN, September 1978), forest clearing and collecting by plant fanciers. (Ironically, no plant has become threatened because we eat it—societies maintain their important food plants through careful stewardship.)

The case of Furbish's lousewort

Today the most celebrated of all endangered plants is an unprepossessing member of the snapdragon family (left), Furbish's lousewort *(Pedicularis furbishiae),* which was named for Kate Furbish, an American turn-of-the-century botanical artist of considerable repute. After a careful search, the U.S. Army Corps of Engineers has located only about 1,000 individual plants—all of them along a 120-mile stretch of the St. John River in northern Maine and a much shorter stretch of the river in New Brunswick. The surviving louseworts occur in the area of the proposed

Dickey-Lincoln hydroelectric project, which, if constructed, would inundate them. Because of the special protection endangered plants and animals have been given in the United States, the future of the Dickey-Lincoln project has been called into question.

The case has aroused intense emotion, both on the part of the environmental groups who want to see the dam halted—the free-flowing St. John not only provides a riverbank habitat for the lousewort but runs through a beautiful 140-square-mile wilderness area—and of proponents of the dam. The feelings of the latter were articulated in a letter to the editor of *Time:* "For heaven's sake, the species was thought extinct anyway—let's make it official and drown it under a few billion gallons of water." It appears now that the dam will be built—but with special conservation measures to save the plant.

Invasion by subdivisions and rooikrans

Other American plants are endangered by much smaller development projects. One such is the Dehesa beargrass or San Diego nolina *(Nolina interrata),* a lovely relative of the lily that bears a flower stalk about five feet high (right). Only about 150 individual plants are known to exist, and they are all distributed along the margins of two or three small gullies in San Diego. Since the locality has recently been designated as a residential area, the chances are that this elegant plant will be lost forever.

It is not only in the United States that plants are under pressure. The temperate Cape flora of South Africa, dominated by heaths and proteas—flowers that look like roses made of porcelain—is one of the most varied and spectacular in the world. Yet it has been estimated that approximately 1,500 species in the Cape flora are threatened. One of the rarest proteas, *Mimetes hottentotica,* is being invaded and ousted by weedy Australian trees such as hakeas and rooikrans.

Even more disquieting is the illegal trade in South African cycads. These plants are so coveted by collectors that recently a specimen of *Encephalartos woodii* was stolen from the Durban Botanic Gardens and is said to have sold for $65,000. Another endangered cycad, *Encephalartos barteri* (p. 126), is being destroyed because it has a seed from which a hallucinogenic drug can be extracted—thieves even stole seeds from a specimen in Great Britain's Royal Botanic Gardens at Kew.

The African violet *(Saintpaulia ionantha),* widely known as a house plant, is exceedingly rare in its native habitat, the damp cliffsides of eastern Tanzania. There its precarious existence is threatened by the removal of forest trees that normally provide the shade in which it grows best.

Indeed, throughout the tropical regions of the

Dehesa beargrass thrusts up its stalk in a ravine in San Diego. This lilylike plant is under even greater pressure than the more celebrated lousewort.

Bare of leaves in the dry season, massive baobabs dominate the Senegal landscape. Traditionally

world the forests are being cut down at an alarming rate. Exploitation on this scale could, in the opinion of many ecologists, ultimately affect global climate. The disappearance of these lush but fragile ecosystems could alter the amount of carbon dioxide in the air, the rates of vaporization of moisture, and the albedo—the amount of solar radiation reflected by the atmosphere—and thus could trigger major changes in the entire biosphere.

Rain forests contain many particularly vulnerable, rare and famous species that are disappearing before the ax. A number of the striking displays of rhododendrons that used to grace the Himalayan foothills have been so depleted that there are now much grander displays in the Royal Botanic Garden at Edinburgh, Scotland. In the Himalayan orchid jungles, many endemic, epiphytic orchids used to be safely supported by specialized microclimatic conditions. The effects of primary forests being clear-cut for timber, along with pressures of urban and agricultural expansion, as well as collecting by commercial plant hunters, are dooming extensive, beautiful populations.

The rain forests of eastern Australia, along the coast of Queensland and New South Wales, are threatened by a number of activities, including replacement of native forests by monocultures of the hoop pine *(Araucaria cunninghamii),* itself an Australian species. A relative of the Australian araucaria that is native to Chile and Argentina, the monkey puzzle tree *(A. araucana),* is being rapidly reduced by the demand for it in the manufacture of plywood. The gigantic Chilean larch *(Fitzroya cupressoides)* may become extinct in ten years, as stands of this tree are being cut at a fantastic rate; all the remaining forests of southern Chile are potential wood pulp for foreign—generally Japanese—paper companies.

Japan, the world's largest importer of wood products and pulp, is expanding its industrial timber operations into the forests of Brazil, Borneo, Malaysia, Sarawak, Indonesia and New Guinea. The chronic and desperate desire for wood and wood by-products is now threatening the Sumatran home of the world's largest flower, *Rafflesia arnoldi* (pp. 128-129). This rare parasitic plant, which grows on the forest floor attached to roots of tropical grapevines, has a flower that can be three feet wide. Its habitats are dangerously near the Japanese timber concessions, and it suffers another threat from the trampling feet of curiosity seekers.

The islands of Malaysia and Indonesia are the home of many species closely related to tropical fruit trees such as the durian, breadfruit, citrus, mango and banana. It is important to save these plants in order

Dr. Ayensu is Secretary General of the International Union of Biological Sciences and the Director of the Smithsonian's Office of Biological Conservation.

regarded as symbols of fertility and protected by taboo, these trees are now being stripped for firewood.

to investigate them for the characteristics of fruit quality and disease resistance that their genes may carry.

More research into the biology of declining plants is urgently needed. A case in point is the endangered *Lodoicea maldivica*—the coco-de-mer or double coconut—which grows in only three reserves on Praslin Island in the Seychelles (p. 127). Its reproductive habits and life history must be studied in the field in order to find methods of cultivating it (I am inclined to doubt that it can be successfully bred in botanical gardens without further research). The double coconut has an excessively low rate of fruit production, and though some researchers have predicted that it will die out even if left undisturbed, I am confident that scientific knowledge, combined with determination, can save this curious plant.

It is impossible to calculate the potential value of the genetic material carried by such plants. Let us consider the origin of wheat, the world's most widely

At a restaurant in China's capital, Peking ducks cook above fire made from wood of *Zizyphus jujuba.*

and intensively cultivated crop (an estimated 381 million metric tons this year). The genetics of one of the common wheats known as Wild Emmer indicates that it comes from a cross between a wheat called Wild Einkorn and a wild grass, possibly *Aegilops speltoides.* This hybrid is cultivated in such places as Ethiopia, Yugoslavia and southern India. Had *Aegilops,* the wild grass, been wiped out, the loss to mankind would have been incalculable.

It is obvious that for agriculturalists to breed stronger, disease-resistant varieties, obscure species that could be useful as parental stock must be rescued from possible extinction. To this end a National Seed Storage Laboratory was established in 1958 at Fort Collins, Colorado. It houses more than 100,000 samples of all sorts of seeds, and has a capacity for more than 500,000. There are seed banks in Mexico that store wheat and corn, a bean bank in Colombia, a bank for pearl millet and pigeon pea seeds in India, and a rice bank in the Philippines.

As populations grow in developing countries, pressures increase on forest and savanna lands. Overgrazing by domestic animals, in particular, is causing deserts to encroach upon grasslands. In North Africa, overgrazing results in the creation each year of 247 *million* acres of new desert.

Some 1.5 billion people, more than a third of the world's population, depend on wood for cooking and heating. Eighty-six percent of all the wood consumed annually in the developing countries is used for fuel. At least half of this is for cooking.

Pressure on the forests because of demands for fire-

Pineapple-size fruit of this rare cycad is the source of pharmaceuticals—and a hallucinogen.

Lady's slipper orchid is disappearing throughout Europe, in England survives in only a single locality.

wood is a serious factor in India, central Africa south of the Sahara, Central America, the Andes and the West Indies. Trees are renewable resources and certain fast-growing species can be ready for firewood harvesting in five or six years. But most developing countries do not have adequate reforestation programs. In the mountains of Nepal it takes a whole day to gather a supply of firewood, and in some areas of West Africa a villager has to walk 15 miles to find wood.

The need is so great that wood is poached from officially protected forest preserves. In West Africa people cut each other's hedges at night, and remove scaffolding from building sites. Where wood does not exist at all, as is now the case in parts of India, the Near East and Africa, people burn dung as an alternative—some 400 million tons of it annually. Formerly, much of it was used as fertilizer to enrich the soil.

Drought and famine are again this year gripping the Sahel belt of West Africa. With so little vegetation left, even the majestic baobab tree *(Adansonia digitata)* has become vulnerable (pp. 124-125).

The baobab is virtually the botanical symbol of the hot African countries, and traditionally has been protected by taboo because of its prominence in African religious beliefs. At the mouth of the Senegal River the French botanist Michel Adanson, for whom the genus is named, found trees with European names carved in the bark from the 14th and 15th centuries, and some specimens are reputed to have lived for 5,000 years. The baobab's spongy, swollen trunk can be as much as 100 feet in diameter and serves to store water; its imposing stature and shape make it recognizable even on a distant horizon. Unfortunately, these great trees are now being stripped and mutilated by people desperate for fuel.

Last year, I encountered an unusual case of preservation of a firewood species during a visit to China—a country that now takes the conservation of flora very seriously. At the Peking Duck Restaurant in the Chinese capital, the wood of *Zizyphus jujuba* is used in the cooking and smoking of the delicious meat in order to bring the duck's bouquet to perfection. Because of its value in preparing this feast, the source of the wood is kept a closely guarded secret, known only to the elite restaurateurs, so that the trees will not be cut down indiscriminately (p. 125).

China recently has established several floral reserve areas and Japan, too, is now taking stringent measures to preserve her few remaining natural habitats of native plants.

The flora of the heavily populated Japanese islands has suffered great damage in the past. Indeed, island ecosystems in general are particularly vulnerable to destruction. The Hawaiian Islands are a good example. The progenitors of the present-day Hawaiian flora arrived at infrequent intervals over thousands of years, and in the isolation of the islands speciated into new plant forms, of which 97 percent exist nowhere else in the world. In these islands plants assumed special characteristics. Some developed shallow roots to

Paphiopedilum venustum, an orchid of the Himalayan foothills, is vanishing as its habitat is destroyed.

The coco-de-mer, noted for its big double coconuts, is nearing extinction in the Seychelle Islands.

spread horizontally throughout the thin soil. Others developed without defensive thorns or spines—so common among plants in similar mainland habitats—since mammalian foragers and tramplers were absent. Weird-looking plants emerged with leaves confined to dense rosettes at the tips of spindly branches; some families, such as the violet, which are small herbaceous plants elsewhere, evolved into tree-sized giants.

Then the native Polynesian Hawaiians and the European colonists arrived. Human occupation has resulted in logging, massive erosion, introduction of troublesome exotic weeds and fast-growing exotic trees such as the *Eucalyptus,* overgrazing by feral goats and swine, and massive land clearing. Overall, more than 50 percent of the native Hawaiian flora is endangered, threatened or already extinct.

Throughout the world there has always been a demand for stimulating brews that will restore flagging spirits, cure diseases and increase sexual appetites. The ginseng root (SMITHSONIAN, February 1976) has long been believed to be a source of such powers, and recently there has been an upsurge in its use—and price. The ginseng of world commerce comes from two plants, one Asiatic, the other North American. The Chinese are great users of ginseng tea, and on my first trip to China in 1975 I noticed a comfortable supply of ginseng products in local shops. But on my return visit last year, the shops were bare owing to the insatiable demands of Japanese tourists who had been purchasing all the ginseng in sight.

In 1977 the United States exported 380,000 pounds of ginseng valued at $26.5 million. Of this, about half came from farms in Wisconsin and about half from the wilds, where the plant has been depleted.

Many other plants, of course, are used for their therapeutic values and this has a twofold effect on the world's flora. On the one hand, the demand for herbs, particularly in parts of Africa and Asia, has brought some plants near extinction. On the other hand, the growing evidence that herbal medicine is not without scientific foundation has made it imperative that no plant species should be wantonly destroyed without analysis of its chemical constituents.

Recent studies of Latin American orchids, for example, may offer new insights into the aging process. Bees that visit the orchids collect chemicals from them, which they store and possibly metabolize. It is now known that the male bees that collect these fragrant compounds live longer than males that do not. Do the compounds, then, control aging in some way? If the orchids disappear, we may never know the answer.

Even the simplest plant may have a future importance that we cannot predict. Recently, we have learned that certain species of lichens, which are healthiest in pure, uncontaminated air, often shrivel up and die from pollution. Thus they have become useful indicators of atmospheric problems.

Pollution is detrimental to many plants. Some of it originating in the United States is now blowing across the Atlantic Ocean to the extremities of West-

ern Europe. Similarly, England's locally manufactured pollution is wafted eastward; Scandinavians believe it may affect their vegetation. This eastward chain reaction, if heavy metals and chemical particles fall onto orchards and croplands, could reduce European food production.

Conservation of the world's flora requires a commitment to preservation of natural landscapes and perpetuation of natural vegetation. This commitment is being made by a number of governments, and also by ordinary people who are simply trying to combat the degradation of their homelands. Last year in India, in order to resist the felling of a forest, the people of the Alaknanda River Basin in Uttar Pradesh peacefully demonstrated against the cutting by joining hands around the trees to ward off the loggers. The forest was subsequently saved.

The celebrated British tropical botanist, E. J. H. Corner, related a comparable incident in Australia: "A few years ago, not a national park but a car park was planned in Sydney. It would have necessitated the felling of some stately trees of the Moreton Bay fig [*Ficus macrophylla*]. It was not the officials, however, that saved them, or an august body of scientific representation, but the labourers of the Builders' Federation who threatened to strike if the trees were cut."

Saving the world's plant resources calls for more protection and management, more research, and an increasing level of public awareness about our vanishing heritage. The *Plant Red Data Book,* it is hoped, will help to generate that awareness.

In Sumatra the world's largest flower, *Rafflesia arnoldi,* produces a blossom three feet across. This photograph is by Smithsonian's Kjell Sandved.

ONE OF THESE CAMERAS WAS MADE JUST FOR YOU. HERE'S HOW TO TELL WHICH ONE.

If you've considered buying a 35mm single lens reflex camera, you may have wondered how to find the right one out of the bewildering array of models and features available.

And you have good reason to wonder, since the camera you choose will have a lot to do with how creative and rewarding your photography will be.

Of course, what you pay for your camera is important. But it shouldn't be your only consideration, especially since there are very expensive cameras that won't give you some of the features you really need. So before you think about price, ask yourself how you'll be using the camera and what kind of pictures you'll be taking. Your answers could save a lot of money.

How automatic should your camera be?

Basically, there are two kinds of automatic 35mm SLR's. Both make use of advanced electronics to give you perfectly exposed pictures with point, focus and shoot simplicity. The difference is in the kind of creative control you get.

For landscapes, still lifes, portraits and the like, you'll want an *aperture-priority* camera. It lets *you* set the lens opening, while *it* sets the shutter speed automatically.

This way, you control depth-of-field. That's the area of sharpness in front of and behind your subject. Many professional photographers believe that depth-of-field is the single most important factor in creative photography.

At times you may want to control the motion of your subject for creative effect. You can do this with an aperture-priority camera by changing the lens opening until the camera sets the shutter speed necessary to freeze or blur a moving subject. Or you can use a *shutter-priority* camera, on which you set the shutter speed first and the camera sets the lens opening automatically.

Minolta makes both types of automatic camera. The Minolta XG-7 is moderately priced and offers aperture-priority automation, plus fully manual control. The Minolta XD-11 is somewhat more expensive, but it offers both aperture and shutter-priority automation, plus full manual. The XD-11 is so advanced that during shutter-priority operation it will actually make exposure corrections you fail to make.

Minolta makes all kinds of 35mm SLR's, so our main concern is that you get exactly the right camera for your needs. Whether that means the advanced Minolta XD-11. Or the easy-to-use and moderately priced Minolta XG-7. Or the very economical Minolta SR-T cameras.

Do you really need an automatic camera?

Without a doubt, automation makes fine photography easier. But if you're willing to do some of the work yourself, you can save a lot of money and get pictures that are every bit as good.

In this case, you might consider a Minolta SR-T. These are semi-automatic cameras. They have built-in, through-the-lens metering systems that tell you exactly how to set the lens and shutter for perfect exposure. You just align two indicators in the viewfinder.

What should you expect when you look into the camera's viewfinder?

The finder should, of course, give you a clear, bright view of

Automatic sequence photography is easy when you combine a Minolta XD-11 or XG-7 with optional Auto Winder and Electroflash 200X.

Specifications subject to change without notice.

your subject. Not just in the center, but even along the edges and in the corners. All Minolta SLR's have bright viewfinders, so that composing and focusing are effortless, even in dim light. And with a Minolta there's never a question about focusing. You'll find focusing aids in every Minolta 35mm SLR viewfinder that make it easy to take critically sharp pictures.

Information is another thing you can expect to find in a well-designed viewfinder. Minolta believes that you should never have to look away from the finder in order to make camera adjustments. So everything you need to know for a perfect picture is right there in a Minolta finder.

The match-needle viewfinder: just align two indicators for correct exposure. Because you're doing some of the work, you can save some money.

The electronic viewfinder: light emitting diodes tell you what the camera is doing automatically to give you correct exposure.

In the Minolta XD-11 and XG-7, red light emitting diodes tell you what lens opening or shutter speed is being set automatically and warn against under or over-exposure. In Minolta SR-T cameras, there are two pointers which come together as you adjust the lens and shutter for correct exposure.

Do you need an auto winder?

If you like the idea of sequence photography, or simply want the luxury of power assisted film advancing, an auto winder may be for you. Minolta auto winders will advance one picture at a time, or continuously at about two pictures per second. And they give you advantages not found in others, like up to 50% more pictures with a set of batteries and easy attachment to the camera without removing any caps. Optional auto winders are available for both the Minolta XD-11 and XG-7, but not for Minolta SR-T cameras.

How about electronic flash?

An automatic electronic flash can be combined with any Minolta SLR for easy, just about foolproof indoor photography without the bother of flashbulbs. For the XD-11 and XG-7, Minolta makes the Auto Electroflash 200X. It sets itself automatically for correct flash exposure, and it sets the camera automatically for use with flash. An LED in the viewfinder tells when the 200X is ready to fire. Most unusual: the Auto Electroflash 200X can fire continuously in perfect synchronization with Minolta auto winders. Imagine being able to take a sequence of 36 flash pictures without ever taking your finger off the button.

You should be comfortable with your camera.

The way a camera feels in your hands and responds to your commands can make a big difference in the way you take pictures.

The Minolta XD-11 and XG-7, for instance, are compact, but not cramped. Lightweight, but with a solid feeling of quality. Controls are oversized and positioned so that your fingers fall naturally into place. And the electronically controlled shutters in these advanced automatic cameras are incredibly smooth and quiet.

Minolta SR-T's give you the heft and weight of a slightly larger camera, but with no sacrifice in handling convenience. As in all Minolta SLR's, "human engineering" insures smooth, effortless operation.

Are extra features important?

If you're going to use them, there are a lot of extras that can make your photography more creative and convenient. Depending on the Minolta model you choose, you can select from a number of special features. For instance, some models let you take multiple exposures with pushbutton ease (even with an auto winder). Other available extras include a window to show that film is advancing properly, a handy memo holder that holds the end of a film box to remind you of what film you're using, and a self-timer that delays the release of the shutter so you can get into your own pictures.

What about the lens system?

Just about every 35mm SLR has a lens "system." But it's important to know what the system contains. It should be big enough to satisfy your needs, not only today, but five years from today.

There are almost 40 interchangeable lenses available for Minolta SLR's, ranging from 7.5mm fisheye to 1600mm super-telephoto, including macro and zoom lenses and the smallest 500mm lens in the world. And since interchangeable lenses should be easy to change, the patented Minolta bayonet mount lets you remove or attach them with less than a quarter turn.

What's next?

After you've thought about how you'll be using your camera, ask your photo dealer to let you try a Minolta. Handle the camera for yourself. Examine its features and the way Minolta has paid close attention to even the smallest details. And by all means, compare it with other cameras in its price range. You'll soon see why more Americans buy Minolta than any other brand of SLR. For literature, write Minolta Corporation, 101 Williams Dr., Ramsey, N.J. 07446.

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WE WANT YOU TO HAVE THE RIGHT CAMERA.

By Julia Lamb

'The Commodore' enjoyed life—but N.Y. society winced

James Gordon Bennett, publisher-playboy, led the world on a wild and merry chase whether he was afloat, aloft or awash

One summer night in the 1870s, a Rhode Island farmer making his way home along a country road was startled by the sound of pounding hooves, the crack of a whip and the sudden appearance of a coach-and-four driven at breakneck speed by a shrieking coachman who—the farmer stared in wonder—the dim light of the moon revealed to be stark naked. He might have been further astonished to learn that the shouting, nude driver was James Gordon Bennett, Commodore of the New York Yacht Club, publisher of the New York *Herald* and leading American sportsman. Such late-night outings, usually preceded by a liberal sampling of champagne, were not at all uncommon for Bennett, whose extraordinary exploits and eccentric behavior became legendary.

Bennett importantly left his mark on the publishing world. For the greater glory of the New York *Herald,* he sent reporter Henry Stanley to Africa to find a missing English missionary, Dr. David Livingstone. The words, "Dr. Livingstone, I presume," first appeared in the columns of his newspaper. Bennett also sponsored expeditions to find the North Pole and to explore both Alaska and the Congo, and was rewarded by having an Alaskan lake, an African mountain and river, and a Siberian island named for him. He introduced the weather forecast and a real estate department to newspapers, and put sports on the front page for the first time. Under his guidance, the *Herald* became the preeminent newspaper in America, if not the world, employing such writers as Mark Twain, Walt Whitman and Stephen Crane and breaking such major news stories as Custer's battle at the Little Bighorn and the sinking of the *Maine.*

James Gordon Bennett, center, gathers friends and pets at his French seaside villa. His

"The Commodore" also had shortcomings. Though he was tall and handsome, with sharp, blue eyes, a bristling moustache and the bearing of a military man, Bennett's initial favorable impression was all too often offset by boorish behavior. He was "self-willed, authoritarian, suspicious, capricious, socially charming and vain in almost everything," said a colleague on the Paris *Herald.* A correspondent for the *Herald* declared that "When sober he displayed the worst qualities of the Scotch and when drunk the worst qualities of the Irish."

In the 1870s, it was said that Bennett possessed the largest assured income in America after Cornelius Vanderbilt and William B. Astor. He inherited his position, wealth and name from his father, a Scottish

Julia Lamb, a Senior Reporter on the staff of Sports Illustrated, *writes free-lance articles.*

lapdogs drank only Vichy water; his parrot greeted him with "Good morning, Commodore!"

immigrant who founded the *Herald* in 1835 and built it into a major American newspaper. Father and son were complete opposites. James Gordon Bennett sr. was as short and plain as his son was tall and handsome. He was austere where Bennett jr. was profligate. As one of the most outspoken editors of his time, the elder Bennett faced peril in the streets of mid-19th-century New York. Angry readers horsewhipped him at least six times, sent bombs to him and even tried to drown him. Because of his humble origins and his lack of social polish, Bennett sr. was also considered unfit for most New York drawing rooms. "American Society," he once said, "consists of the people who don't invite me to their parties."

At the age of 45 he married Henrietta Crean, an Irish woman half his age, but the marriage suffered from Bennett's professional and social difficulties. The birth of James jr., their first child, on May 10, 1841, was greeted by the rival New York *Sun* with a story that questioned the baby's paternity. Though the founder of the *Herald* had developed a certain indifference to these attacks, his young wife had not. A

Ever the fashion plate, Bennett nonetheless was ready to shuck his duds after a bibulous evening.

few years later, to escape the sneers of New York, Mrs. Bennett took her two small children, James and a younger sister, to the friendlier atmosphere of Paris.

In his mid-teens, young Bennett returned to New York to learn publishing. With the polish and sophistication acquired abroad and the large fortune he stood to inherit at home, he was quickly accepted as a gentleman by the same society leaders who had snubbed his parents. The doors of Fifth Avenue drawing rooms were opened to him, and at 16 he was elected to the New York Yacht Club, the youngest member ever admitted to that august group. Bennett sr. also welcomed him warmly, setting up a desk for his son next to his own, hiring an office boy as a companion and supplying his heir with an allowance far larger than the salary of the *Herald*'s best reporter. Young Bennett spent it on fast horses and elegant carriages, lunched every day at Delmonico's, wagered handsomely at the races, drank magnums of the finest champagne and wine, and acquired a yacht, the 160-ton *Henrietta*. When the Civil War broke out, *Henrietta* and her young master (he was not yet 20) briefly served in the Union Navy, helping to blockade Port Royal, South Carolina, but the imperious manner of 3rd Lieutenant Bennett so annoyed his superior officers that he and his yacht were sent home after only a few months—ending his career of one scant year.

One October evening in 1866, while sitting over brandy and cigars at the Union Club, Bennett and his friends Pierre Lorillard jr., and George and Frank Osgood decided to test Bennett's *Henrietta*, Lorillard's *Vesta* and the Osgoods' *Fleetwing* in an ocean race from Sandy Hook, New Jersey, to the Isle of Wight, England. To make the world's first transatlantic yacht race even more challenging, the winner would receive a $90,000 purse—$30,000 contributed by each contestant.

The race was to take place in December. Lorillard and the Osgoods decided not to go along on the trip to England themselves, leaving the crossing in the hands of their professional crews, but Bennett, despite pleas from friends and family, insisted on sailing on *Henrietta*. His regular crew were not so foolhardy. "The men were willing enough to engage," said a weekly magazine of the time, "but their mothers, wives and sweethearts interfered and persuaded them not to sign articles. . . ."

The three yachts sailed from New York on December 11, and a loud cheer went up for Bennett as "the only man who goes in his own boat." Ice formed on rigging as the yachts were driven by strong westerlies. Seven days out of New York, the weather went from bad to worse.

On the Osgoods' *Fleetwing*, a huge wave swept eight

The Herald Building, designed by Stanford White, marked New York's Herald Square. This 1906

photo shows the bronze owls that Bennett considered lucky. They lined the cornice like sentinels. At his

James G. Bennett sr., left, founded the New York *Herald* in 1835. Though he made a huge success of it, he and his lovely Irish wife, Henrietta, center, were considered to be socially unacceptable. Bennett wangled a Civil War commission for his spoiled son, right, but Junior resigned in a year.

men out of the cockpit. Two managed to struggle back aboard, but six were lost at sea.

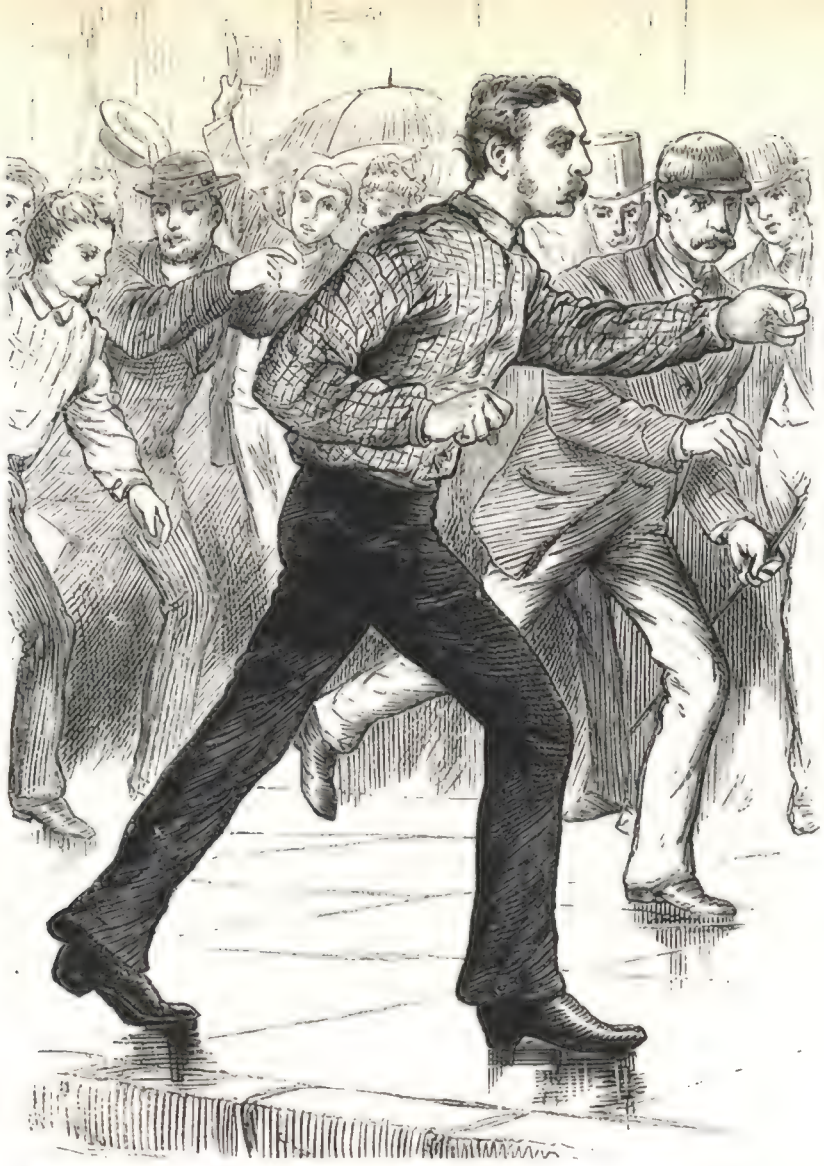
Lorillard's *Vesta*, a light centerboarder, led as far as the English Channel, but *Henrietta* passed her with only a few miles to go and finished first off the Isle of Wight at 3:45 P.M. on Christmas Day. Bennett and *Henrietta* were the toast of Europe and America.

Two years later an English sportsman, James Ashbury, wrote the New York Yacht Club asking that it prepare its finest yachts to defend the silver trophy won in 1851 by the schooner *America*. As a sort of tuneup, Ashbury suggested that an American yacht sail against his 108-foot *Cambria* on her trip across the Atlantic to retrieve the America's Cup. Bennett, recently named vice-commodore of the New York Yacht Club, sailed his new yacht, the 120-foot *Dauntless*, to England for this first international transatlantic race.

The two yachts started off Cobh, Ireland, on the Fourth of July, 1870. Three days out to sea, two hands aboard the American schooner tried to furl the flying jib in gale-force winds and were washed off the jib boom and lost. *Cambria* reached Sandy Hook one hour and 43 minutes in front—a remarkably close race

home on Washington Heights, New York, he took the reins, clothed, at elegant coaching party.

Another favorite home was Stone Villa, the extravagant Bennett mansion in Newport, Rhode Island.



Ever competitive, Bennett, above, outwalked John Whipple, champion pedestrian, in 13-mile hike.

considering that it took more than 23 days to complete the crossing, but still a loss for Bennett and the New World. Ashbury's luck did not hold for the Cup races. *Cambria* finished tenth in a fleet of 23, well behind *Magic*, which won, and the 19-year-old *America*, which was fourth. Bennett's *Dauntless* came in fifth.

The Commodore had other sporting interests. When the Coaching Club of New York was formed in 1875 "for the encouragement of four-in-hand driving," Bennett was one of the original members, along with August Belmont sr., August Belmont jr., who later founded the racetrack Belmont Park, Oliver H. P. Belmont, Pierre Lorillard, Leonard Jerome (Winston Churchill's grandfather and founder of Jerome Park in the Bronx, a leading racecourse of the 1870s and '80s), James Roosevelt Roosevelt (father of FDR), Alfred G. Vanderbilt, William K. Vanderbilt, William C. Whitney and Harry Payne Whitney.

In New York, when the Coaching Club held its meets in Central Park—usually in the late afternoon—the parade of great coaches with polished brass and harness, splendidly dressed occupants and liveried servants, each coach pulled by four beautifully matched and groomed horses, drew the admiration and envy of onlookers. A club member drove his own coach, and fashion dictated that he wear a silk top hat, green coat with gilt buttons, yellow-striped waistcoat, patent-leather boots and a large boutonniere.

A year after the Coaching Club was founded, Bennett returned from another trip to Europe with mallets, balls and a copy of the rules of a game called polo that British officers had brought back from India. With a generous donation of money, Bennett helped establish the Westchester Polo Club, the first in the country, and engaged a member of the Delmonico restaurant clan to keep its members well fed.

Bennett brought to Newport an entire English team to show the locals how to play the game. One member of that team was a Captain "Sugar" Candy, hailed by the Newport *Daily News* as "without a doubt the best rider ever on Rhode Island soil." One summer day in 1879, perhaps after a bottle or two of bubbly, Bennett challenged Captain Candy to ride his pony into the sacred confines of the Newport Reading Room, the most exclusive private club in the resort town. Candy obliged the Commodore, taking his horse up the front steps to the veranda and into the hallway of the club, sending some of the stuffier clubmen into convulsions of rage. A stiff note was dispatched from the club to Bennett, himself a member, declaring that Captain Candy was no longer welcome as a guest.

Incensed at the Reading Room's lack of humor, the volatile Bennett decided to draw up plans for an elegant new building to be erected across the street from his Newport mansion, Stone Villa. Stanford White designed the Newport Casino, a wonderful complex consisting of Bennett's club, plus a ballroom, theater, restaurant, fountains and grass courts on which to play another new game from England—lawn tennis.

Bennett's private club there soon folded, but the Casino thrived, and the tennis championships remained in Newport from 1881 until 1914, when they were moved to Forest Hills, Long Island. The Casino now houses the Tennis Hall of Fame.

Other Bennett sports included bicycling and walk-

For tennis, a recent import, Bennett's court equipment always included Turkish slippers.

ing. On a warm evening in New York he liked to cycle around his Fifth Avenue block, pausing as he passed his town house for refreshments supplied by a butler, who stood on the sidewalk with a silver tray bearing a glass of brandy.

The death of the senior Bennett in 1872 left the Commodore in control of a powerful and very lucrative publishing empire. After he was tempted into matrimony in the fall of 1875, the matrons of Fifth Avenue and Newport buzzed with the news. At 34 he became engaged to Caroline May, daughter of a prominent Baltimore family, but the enchantment did not last. On New Year's Day 1877, after paying a number of holiday calls, Bennett arrived for a party at his fiancée's town house. What occurred in the Mays' drawing room is obscured by Victorian sensibilities, but the most reliable story is that Bennett urinated into the grand piano.

That regrettable incident not only ended the engagement, but two days later Miss May's brother Frederick accosted Bennett outside the Union Club and vigorously applied the traditional horsewhip. The publisher challenged May to a duel. They met on a cold January afternoon at Slaughter's Gap, Delaware, near the Maryland border. May fired into the air. Bennett, an excellent shot, apparently fired *at* his opponent but missed.

Bennett returned to New York to find friends still

Dapper in his derby, Bennett showed up at Reims in 1909 for the first air race for his trophy.

Americans Lahm (left) and Hersey won the first of Bennett's balloon race trophies in 1906.

loyal but the drawing-room doors were firmly shut. Humiliated, Bennett moved to Paris, where eccentric behavior was acceptable, especially if you were rich. Except for an occasional business trip to New York or Newport, the Commodore lived abroad for the remaining 42 years of his life.

When not entertaining he was usually aboard his yacht, surrounded by a pack of 20 or more of his favorite small dogs and catered to by an assemblage of friends, employees and assorted parasites. By the 1880s, when the Commodore reached his forties, he had given up sailing craft and now went to sea in the comfort of a steam yacht—first the *Namouna,* later the 314-foot *Lysistrata,* supposed to be the grandest yacht in the world. She had a crew of 100, a Turkish bath, an Alderney cow housed in a padded stall and cooled by an electric fan, and a suite of staterooms for her owner on each of the three main decks, perhaps as a convenience for the ever-amorous Commodore.

By the turn of the century, Bennett, though nearing his sixties and now seldom active in sports, still retained his love of speed. When the beautiful Consuelo Vanderbilt and her mother visited the Commodore at his Riviera estate, the young lady reported that "trains used to rush through his garden and Mr. Bennett invariably ran to his window to watch them pass." Miss Vanderbilt did not approve of the Commodore because "there were curious tales concerning his fancies."

Owls were one of his odder fancies. The birds were a sort of talisman. They appeared on his stationery, his coaches, the gateposts of his mansions, flying about his estates, and on the masthead of the *Herald.* Large, bronze owls peered down from the cornice of the newspaper's main office on Herald Square. Damon Runyon later claimed that one of Bennett's mistresses had tiny owls tattooed on her knees.

His increased restlessness caused hardship for his employees, especially those in Paris. Though Ralph Pulitzer described him as exerting "a striking and stimulating influence upon the journalism of his time," Bennett would sometimes descend on the *Herald* offices in the early morning, dressed in evening clothes and reeking of fine cognac, and send his low-paid staff into a dither. He would fire some, promote others, hand out large raises and, at least once, wrote an outrageous editorial that the harassed editors apparently managed to lose on the way to the composing room. The New York office dreaded his visits, and also his cables, for they often demanded that a *Herald* reporter instantly set out for Paris. One managing editor made the mistake of answering such a summons by telling Bennett that the man called for should remain in New York because he was "indispensable." The publisher then requested the names of all the indispensable men on the *Herald* staff. When the editor replied with a list of his dozen best, Bennett fired them all, saying "I will have no indispensable men in my employ."

Happily for the *Herald* people, the Commodore discovered a new way to entertain himself. In 1900 he put up "a valuable objet d'art" as a trophy for a race in that new invention, the automobile. Bennett's prize, a silver cup embossed with a picture of the Genius of Progress driving a racing Panhard while the Goddess of Victory stood on the seat holding a laurel wreath, became known throughout the world as the Gordon Bennett Cup, though the *Herald* always referred to it as the Coupe Internationale d'Automobile, respecting the publisher's decree that his name should

Louis Blériot, dashing French flyer, crashed on a record speed run just after losing the

first Bennett air race to American Glenn Curtiss. Bandaged Blériot, right, sits glumly with wife.

never appear in his own newspaper. Though any kind of automobile—steam, electric or gasoline—was allowed in Bennett's race, every entry was to include a driver and mechanic seated side by side, and each country involved could enter only three vehicles.

The first Gordon Bennett Cup Race, held in 1900 on a circuitous route between Paris and Lyon, was marred by a multitude of problems. There was almost no crowd control, signposts were few (several competitors lost their way and never finished), no attempt was made to confine livestock or dogs, and the roads were totally unsuited for the heavy racing machines. Belgian driver Camille Jenatzy alone killed six dogs and, in one gruesome accident, Frenchman Fernand Charron, driving a 24-horsepower Panhard built by his own company, charged down a hill at 60 mph and collided with a large Saint Bernard. Yet Charron arrived first in Lyon, winning the "objet d'art."

In 1903, when the race was held in Germany, the winner was a professional driver. No longer was the race an event for well-to-do amateurs. Moreover, auto companies objected to the rule limiting each nation to three entries. Why should France, the top car manufacturing country, be held to the same number of cars as, say, Switzerland? Under heavy pressure from the racers, the Automobile Club de France, the governing body for the event, opened the race to all comers, the Commodore withdrew his patronage, and in 1906 a new race took over—the French Grand Prix.

The Commodore quickly came up with a new project, the Gordon Bennett Cup for balloons. A crowd estimated at a million turned out to watch Bennett himself launch the 16 balloons that started in the first race in 1906 from the Tuileries Gardens in Paris. "As a spectacle the event was a brilliant success," said the *New York Times*. "A quarter of a million people had gathered in the gardens, while the Place de la Concorde, the bridges over the Seine, the embankment of the river, housetops for miles around were black with people." The balloons drifted north toward the English Channel, about half of the group making it across to England: the winner, American Frank Lahm, sailed 415 miles before coming down on a farm in Yorkshire, 23 hours after leaving Paris.

The balloons were such a hit that Bennett expanded to other sports, adding in 1907 the Gordon Bennett Cup for motorboats, a race from New York to Bermuda, and in 1909 the Gordon Bennett trophy for airplanes. Like the balloon races, the latter was immensely popular, attracting 100,000 people a day to an airfield in Reims, France, including the French president, princes, ambassadors, Roosevelts, Goulds, Vanderbilts and the world's finest pilots. The largest number of aircraft ever assembled, 38, were flown at various times by 28 pilots competing for a number of prizes, of which the Gordon Bennett Trophy, awarded for the fastest two-lap speed, was the most important.

Rain caused a number of first-day mishaps. The famous French flier, Louis Blériot, who had just amazed the world by completing the first flight across the Channel, landed in a haystack. Another Frenchman flew his biplane into an open-air restaurant (no one was seriously injured). Other pilots flipped, tipped and crashed all over the muddy field. But on the sec-

ond day Blériot set a new world speed record of 42.87 mph, and that was promptly topped by the lone American, Glenn Curtiss, who flew his Herring-Curtiss biplane an average of 43.38 mph. Then Blériot made a 46.18 mph two-lap run, Curtiss came back with 47.65 mph, and Blériot, in one last try to set a new world record and take the trophy, roared past the stands on the first lap with a very fast clocking, but failed to reappear over the field on the second lap. A column of smoke rising in the distance told the story. Happily, Blériot returned to the field with head and arms wrapped in bandages, battered but unbowed.

The next year, when the races took place at Belmont Park on Long Island, the world speed record was raised to 66.2 mph by Englishman Claude Grahame-White, flying a 100-horsepower Blériot. By 1912 the world and the Gordon Bennett record was up to 108.8 mph in Chicago, and in 1913 it reached 126.67 mph, fast enough to satisfy even Bennett. But by then the Commodore himself was slowing down.

The *Herald* was also fading. In New York's highly competitive newspaper business, a scene that included William Randolph Hearst's *American* and *Journal*, Joseph Pulitzer's *World* and the *Times* under Adolph Ochs, the lack of a resident publisher (and his frequently capricious behavior when he was heard from) eventually took its toll on the *Herald*. Too often the best editors and reporters left Herald Square for rival publications. From a daily circulation high of 510,000 during the Spanish-American War, the *Herald* had skidded to 80,000 by 1914.

Yet Bennett contined to attract attention. On September 10, 1914, shortly after the outbreak of World War I, the 73-year-old bachelor startled Paris and New York society by getting married. His wife was the Baroness de Reuter, widow of a member of the Reuters news service family and the former Maud Potter of Philadelphia. With marriage, Bennett's whole personality seemed to change. His binges ended, he went home for dinner, he spent hours at the Paris *Herald* offices and began an attempt to revive his sagging newspaper. A *Herald* veteran just in from Paris announced to an amazed group in New York, "Bennett is dead. The old, drunken, money-spending Jim Bennett is dead. In his place has come a Scotch miser."

But reform came too late. A superstitious man, Bennett had long been certain that he would die at 77, his father's age at death. Early in 1918 he became even more convinced of that when a fortune-teller predicted the same thing. On May 10, 1918, his 77th birthday, the Commodore was fatally stricken and four days later he died. He was buried in a suburban Paris cemetery, at Passy, in a tomb marked only by owls chiseled in the stone.

What remains of this prince? The *Herald,* sold in 1920, was soon combined with the *Tribune* and that hypenated newspaper carried on until 1966. Herald Square is still around, but the newspaper's Stanford White building, topped with its famous bronze owls, was demolished in the Twenties. The Gordon Bennett Cup for aviation was revived once after World War I, in 1920, then lapsed; the balloon races continued until 1929. *Lysistrata* had been sold to the Russian Red Cross in 1916. The Newport Casino still stands, but Bennett's Newport mansion was long ago turned into a shopping center. Near bankruptcy at his death, he had spent some $40 million during his lifetime on yachts, women, horses, champagne, mansions, trophies, cars, coaches, races, and it was all gone.

Bennett, left, plays host aboard yacht named *Lysistrata,* who was a "beautiful and very fast" lady.

Currier & Ives show start of 1866 race between Bennett's *Henrietta* (left), *Fleetwing* and *Vesta* . . .

Courtesy of Wadsworth Atheneum, Hartford

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. . . but by 1890 the Commodore was content to loll on deck of his steam yacht *Namouna* off Venice.

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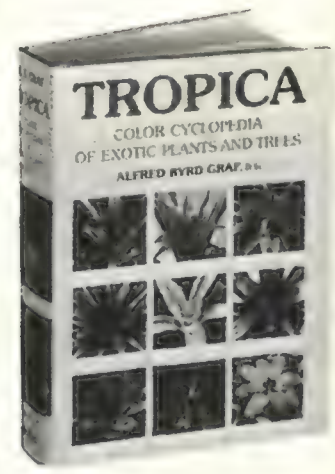

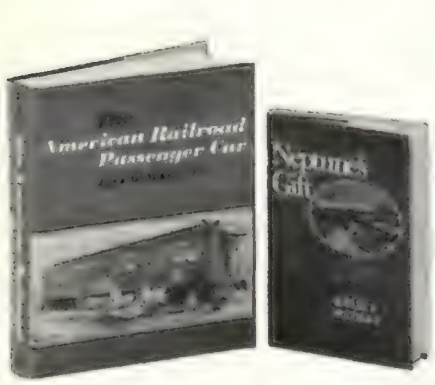

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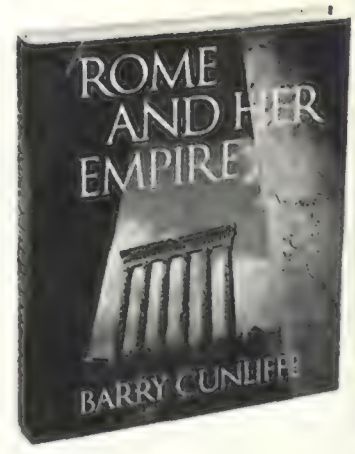

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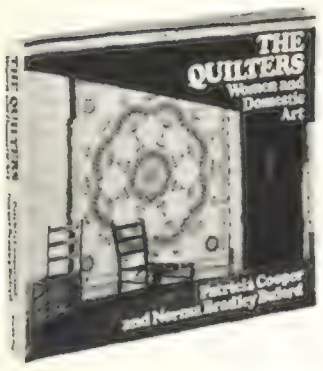

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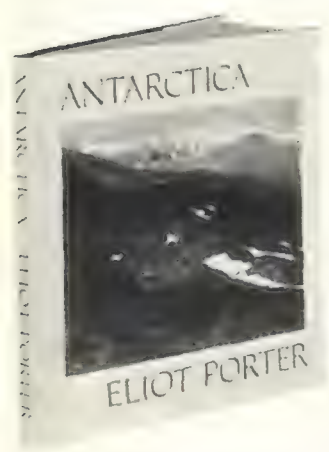

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An engraving by Amos Doolittle shows the inauguration of George Washington on the balcony of Federal Hall, New York City, April 30, 1789.

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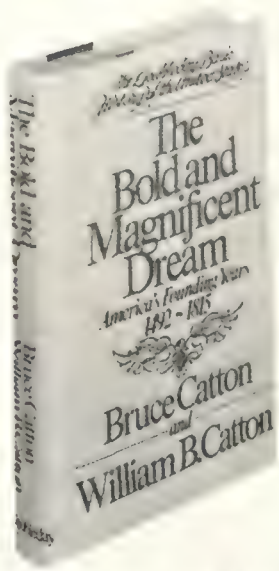

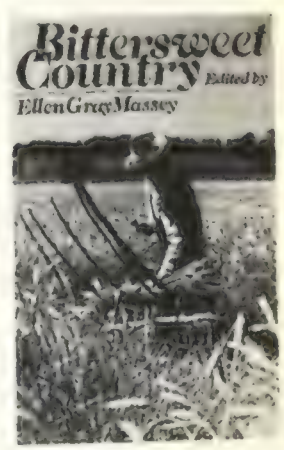

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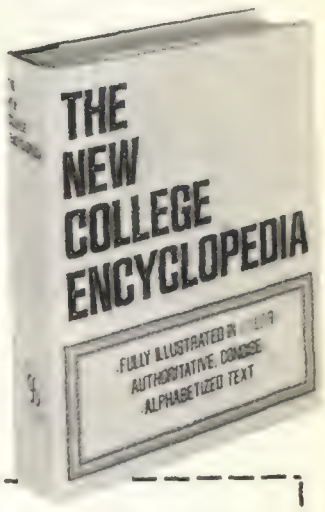

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By Esin Atil

Emperors, peris and demons in Near Eastern art

An exhibition from the Freer Gallery reveals the grace, humor and vivid portraits to be found in secular Islamic drawings

People who are not especially familiar with Islamic art tend to think of it as formal, abstract and mostly limited to decoration, architectural ornamentation and intricate examples of calligraphy. This probably is because of the widely held, though erroneous, belief that the Koran forbids the representation of human or animal forms. The only prohibition that exists applies to religious art, that is, to the decoration of the Koran itself and of mosques and theological schools.

The secular art of Islam is full of drawings and paintings notable for their naturalistic details, vigorous characterizations of men and animals, precisely observed portraits, and even humor. This is made clear in "The Brush of the Masters," an exhibition of Iranian and Indian drawings at the Freer Gallery of Art in Washington (through April 23, 1979). In drawings, more than paintings, there is a spontaneous communication between the artist and his audience; it is as though he is speaking directly to us. But because Islamic art is an art of the miniature (the easel paintings and vast murals of Western art simply do not exist), it demands close attention and concentration.

The tradition of painting in the Islamic world is closely connected with book illustration—hence the small size—by court painters assigned the specific task of beautifying manuscripts with pictorial representations of the events described in the text. Throughout Islamic history, the sultans, shahs and emperors who ruled various regions of the Near East and Central Asia set up studios to produce manuscripts for the royal libraries. These studios incorporated renowned writers, scribes, calligraphers, illuminators, painters and bookbinders, as well as craftsmen who produced the papers, inks and pigments, and prepared the gold and silver paints.

The most celebrated members of the studios were the calligraphers, who often signed their works. Since the court painters worked as a team, the men who executed the illustrations generally remained anonymous. The names of an extremely few painters appear in the manuscripts and even the experts have difficulties in identifying the style of a specific master and in determining which scenes that artist executed.

But within the confines of this highly rigid tradition was another genre which enabled the artists to express their individuality, choose the subjects to be represented and develop a personal style. In addition to the illustrated manuscripts devoted to classical literature,

In *Garden of Heavenly Creatures* (Iran, mid-16th century) peris—fairies or angels—entertain their queen, who is shown seated in an elegant tree house.

This drawing from India (Mughal period, mid-18th century) shows two young women, encircled by attendants, seated on a carpet and smoking water pipes.

history and the sciences, the court artists also produced albums made up of select examples of calligraphy, paintings and drawings. It is in these drawings that the artists were able to free themselves from the conventions of the book, expressing their personal impressions of the physical and spiritual aspects of their age.

The artists worked on polished paper with a fine brush dipped in black pigment, using delicate washes or tints to model certain elements, and highlighting the key features with silver and gold.

The earliest drawings from the Islamic world appear in the 15th century and are to be found in albums or on the margins of literary texts produced in the courts of Iran and Central Asia. Although we do not know the names of these artists, their works reveal individual styles in contrast to the contemporary manuscript illustrations, which were produced by the combined efforts of several court painters.

The artists began to sign their drawings and the painters started becoming identifiable in the Safavid period (1502-1732), during which the whole of Iran was united under one rule. The Safavid shahs first established their court in Tabriz, then moved to Kazvin and finally settled in Isfahan, which flourished under the patronage of Shah Abbas I, who constructed its jewellike buildings and supported the court studios.

A well-staffed studio employing the best artists of the age was always the prerogative of imperial power, and many talented men were sought after by the royal patrons. In the 17th century, members of the aristocracy and wealthy citizens also started collecting single-page paintings and drawings made by famous painters. As the demand for works by established artists increased, the painters began to assert their individuality, choosing themes from their own environment and commenting on the structure of the society.

One of the most popular themes of the Safavid painters was the representation of dervishes and Sufi (mystic) sects. A characteristic example depicts a group of dervishes and their companions indulging in the pleasures of wine (below). The participants, portraying an assortment of ages and types, are shown in various stages of intoxication, gathered in front of one of the venerated holy shrines of Iran. One drunken figure is sprawled over an enormous wine jar; his turban has fallen to the ground, its folds undone and dangling from his neck. The jar appears to have been inspired by Chinese Ming Dynasty wares which were collected in great quantities by the court. The example in the drawing is extraordinarily large, possibly to exaggerate the amount of alcohol consumed by the party. The

Drinking Party (Iran, late 16th-early 17th century) portrays a group of laymen and mystics engaged in what was—then as now—a widely popular pastime.

school of Isfahan is exemplified by this work, which not only re-creates the figures and setting of the age but also provides a subtle gibe at the mores of the society.

The performance of a troupe of itinerant musicians and dancers is the subject of another drawing (below). The four figures at the lower right are playing a tambourine, panpipes and a pair of drums, while five other men—two of them dressed in goatskins and holding clappers—dance around the musicians, swinging their arms and jumping on one foot. This work, formerly in an imperial album, bears an inscription added at a later date which gives the name of the painter as Mirza Muhammed al-Huseyni and the date as the equivalent of A.D. 1613.

Another drawing from Isfahan, executed a few decades later (around the 1650s), portrays a dervish and his disciple (below). The bearded dervish wears a twelve-gored cap under a loosely wound turban and has a long stole flung over his shoulders, two characteristic features of his class. He is smoking a water pipe held by the youthful disciple while seated on a sheet spread at the foot of a richly foliated tree. The signature of the artist, Muhammed Muhsin, is placed in the center of the drawing, barely visible.

Muhammed Muhsin was from Tabriz and studied calligraphy in Herat before moving to Isfahan. His signature is found on several samples of calligraphy and drawings, two of which bear the date 1649. The

In this jolly scene, *Musicians and Dancers* (Iran, 1613), a troupe of itinerant entertainers—two dressed in goatskins—frolic through a performance.

The finely drawn *Dervish and His Disciple* (Iran, mid-17th century) is signed by Muhammed Muhsin, one of very few examples where the artist is known.

Babur with Attendants (India, late 16th century) shows the founder of the Mughal Empire seated under a canopy and surrounded by members of his court.

artist, who appears to have reached his mature style in the middle of the 17th century, is recorded as having died in 1680. As observed in the portrait of the dervish and his disciple, Muhammed Muhsin employs delicate but controlled lines which flow with ease and define his forms, betraying his earlier training in the art of beautiful writing.

When the works of famous artists became sought after by collectors in the 17th century, patronage began to shift from the court to the wealthy middle classes. The increased demand for single-page paintings and drawings eventually led to the end of the long tradition of illustrated manuscripts. The institution of the court studio also began to disintegrate, with the artists preferring to produce individual works of art for a more varied, and far less demanding, clientele.

Drawings executed in India follow the evolution observed in Iran. They first appear as marginal decorations in manuscripts or as single-page samples incorporated into imperial albums. Eventually, they too are divorced from the concept of the "book," and become personal statements of individual artists.

This parallel development is not surprising, since it was the artists of the Safavid court who were invited to India to set up the imperial studios during the formative years of the Mughal Empire (1526-1858). The greatest Mughal emperor, and the most enthusiastic patron of the arts, was Akbar (1556-1605), whose passion for painting was second only to his interest in history. Akbar commissioned the artists of his newly founded studio to illustrate biographies of the emperors and other historic figures, showing a particular concern with the documentation of contemporary events and personages. Portraiture in which the subject was represented with an almost photographic likeness became the most outstanding feature of 17th-century Mughal art.

One of the most refined drawings executed in that court represents Emperor Babur, Akbar's grandfather who founded the Mughal dynasty (above). Babur was born in Ferghana, now in Soviet Turkestan. He was descended from Tamerlane on his father's side and was related to Genghiz Khan through his mother. In 1504 he swept through Afghanistan and was the master of northern India within the next quarter century. The fascinating birth of the Mughal Empire is narrated in his memoirs, which were originally written in Turkish, his native tongue, and later translated into Persian, the court language, as the *Baburname*. During Akbar's reign several illustrated versions of the *Baburname* were produced in the court studios.

Dr. Atil is the Freer's curator of Near Eastern Art. She is writing A History of Turkish Art, *to be published next year (Smithsonian Institution Press).*

Sultan Parviz with an Ascetic (India, Mughal period, early 17th century) shows another historic figure, Babur's great-great-grandson.

The figure of Babur in the drawing bears a close resemblance to his representations in the *Baburname* illustrations. A youthful attendant stands behind the emperor, who leans against a richly embroidered cushion while conversing with a bearded scholar holding a sheet of poetry. Seated in front are a pair of musicians and several courtiers with attendants. In the foreground is a pool with a pair of ducks, surrounded by small trees and flowers. Behind the little pavilion is a large and realistic plane tree set against the mountains. Although the composition of the scene is taken from Safavid art, the portraitlike representations of the figures is typically Mughal. Babur had a passion for gardens and plants, which is implied by the setting.

Another example depicts Sultan Parviz conversing with an ascetic (left). This drawing was executed in the court of Jahangir (1605-27), Akbar's son and heir. Jahangir was a true connoisseur of the arts, and liked soft and delicate images, preferring single-page paintings and drawings in contrast to the illustrated historical manuscripts favored by his father. Sultan Parviz, the second son of Jahangir, was an amiable prince. Unfortunately, he shared his father's excessive fondness for alcohol, and died before him.

In 1738-39 India was invaded by Iran's Nadir Shah, who entered Delhi and carried off the treasures of the Mughals, including the fabled Koh-i Nur diamond

This is a portrait (India, Mughal period, mid-18th century) of Nadir Shah, who brought to Iran the Koh-i Nur diamond and the Peacock Throne.

(now in the British Crown Jewels) and the Peacock Throne (still in Tehran). The amount of money levied from this campaign was so large that the Iranians were exempted from taxes for three years.

The drawing representing Nadir Shah (p. 149) is most likely a contemporary portrait, executed shortly after his Indian campaign. His unfalteringly stern expression is true to the reputation of this remarkable man who saved Iran from Afghan domination, reestablished its political power and founded his own short-lived dynasty, the Afsharids (1736-95).

There exists a group of fascinating tinted drawings, most of which are found in two albums owned by the Topkapi Palace Museum in Istanbul. These albums are thought to have been compiled in Tabriz during the 15th century by Sultan Yakub, one of the rulers of the Akkoyunlu Turkmen Empire which controlled western Iran prior to the rise of the Safavids. The contents of these volumes is eclectic, containing samples of calligraphy, single-page paintings, sketches, drawings and manuscript illustrations, as well as examples from European and Far Eastern traditions, dating from the early years of the 14th to the end of the 15th century. Among the drawings is a series signed Mehmed Siyah Kalem, or "Mehmed the Black Pen"—that is, one who works with brush and ink. They depict either scenes of nomadic life or fantastic creatures (monsters or demons) engaged in activities reflecting the shamanistic rites and traditions of Central Asia.

Although these drawings bear the name of the same man, there are stylistic variations indicating that we are dealing with a "school" instead of an individual. A typical example represents two demons enjoying wine and music, although bound in chains (below). The exquisite brushwork used to model the creatures and the abundant use of gold depicting the metal objects indicate that this example was executed by one of the leading members of the school. The origin of this series is still debated; it has been attributed to the steppes of Central Asia, as well as to the courts of the Turkmen or Timurid dynasties which ruled Iran and Transoxiana in the 15th century. The meaning of the scenes depicted in the drawings is also not fully understood (for example, why are the demons fettered?), since they represent themes from a tradition that has disappeared. In the works of these anonymous masters we are made aware of a rich and sophisticated society that existed within the Islamic world, while preserving the immemorial beliefs and practices of a civilization that no longer exists.

Two Fettered Demons (Iran or Central Asia, late 15th century) are rather pathetically attempting to amuse themselves, even though in leg irons. Animal hooves are probably shamanistic ritual objects.

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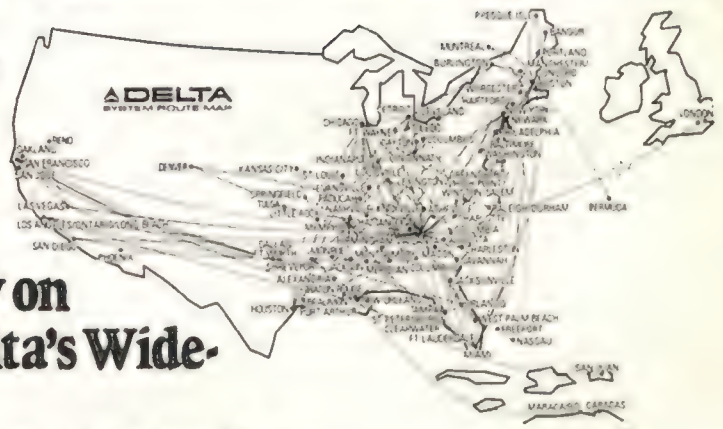


This is Delta's Wide-Ride™ L-1011 TriStar, a $25 million superjet. The "living room" cabins are 8 feet high, almost 19 feet wide.

By Edwards Park

Museum's new hall stirs a breath of fresh sea air

Many years abuilding, Smithsonian's maritime exhibit weighs anchor for a voyage into our seagoing past

Yellow pine walls and sisal rugs give entrance to Maritime Hall a very nautical flavor. Figureheads from the days of sail greet visitors.

Few Smithsonian exhibits can boast a distinctive smell. But the moment you pass under the sign at right and enter the Hall of American Maritime Enterprise or, more simply, Maritime Hall, in the Museum of History and Technology, you pick up the scent. Tarred rope. Hemp. Weathered timber. They produce instant nostalgia, an unmistakable reminder of the sea to anyone who has been on it. One sniff, and there you are again, feet spraddled on caulked teak planks, hands agrip on whatever holds firm ("one hand for the ship, one for yourself"), nostrils flared to the ocean air, clear and heady as Bombay gin, so that all the ship smells gain strength and meaning: salt, tar, hot oil, fried fish, hemp. They all add up to ship, and a lot of them can be singled out in this grand new exhibit.

You enter past a model of *Mayflower*, the Pilgrims' uncomfortable little vessel, 90 feet on deck. One of the last things you visit before you leave is the engine room of S.S. *Oak* (opposite), a longtime Coast Guard buoy tender that got pensioned off a few years ago and coughed up her triple expansion steam power plant to the Smithsonian. (You must call 381-4141 if you want to get down to its lower reaches.)

One of the first period rooms you come to is a Colonial warehouse where hogsheads stand tall and fat beside a careless heap of half-crumbled, aromatic tobacco leaves and coils of well-tarred rope. If you paid attention as you made your way this far, you will know that you are amid the theme of Ocean Commerce. Tobacco from Virginia was the basis of it in Colonial days, so this room, copied from one that is now the library of a small southern Virginia town, gives you the dockside view of commerce.

How did the tobacco get overseas? Beside the warehouse stands the model of the 18th-century tobacco ship *Brilliant* ("Around the Mall and beyond," November 1977), and a few feet from the model a full-size replica of *Brilliant*'s lower foremast rises from her deck to the exhibit ceiling. Here is a chance for a boy to lay his hands on stiff, standing rigging with its mighty deadeyes, to heft the hemp lines—as big around as his arms—coiled at the fife rail where belaying pins stand in their slots. That's what a belaying pin is for, son, to make the running rigging fast and yet let it go in a hurry if need be—not just for the bully mate to swing at the mutineers.

From here you slide into the theme of Ocean Industries, and that means fishing and whaling. The latter fills its own room. "Fills" is right. The display was planned around a 28-foot whaleboat. But, says Nadya Makovenyi, designer of the hall, when the boat arrived it measured more than 30 feet. Walls had to be shoved back to accommodate it.

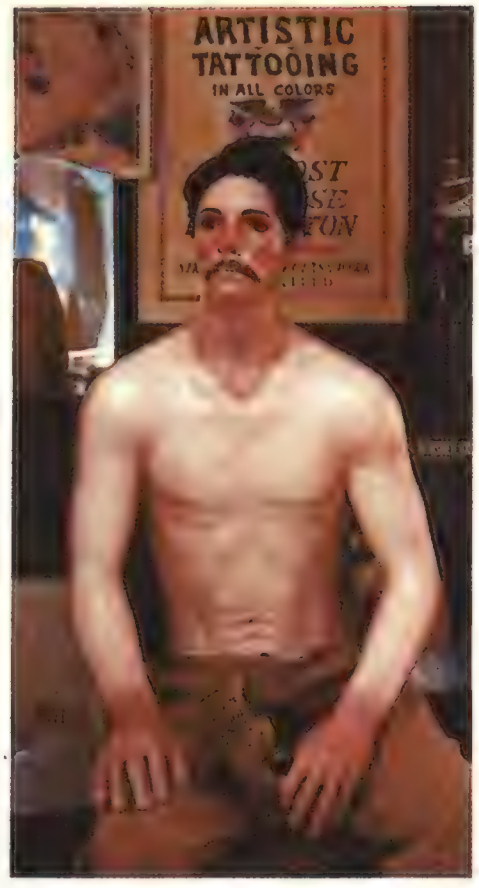
There it rests, anyway, with its long oars and wood-

Complete in every detail, deckhouse and engine room put you right aboard ship. Steam power plant came from S.S. *Oak*, a Coast Guard buoy tender.

Photographs by Kim Nielsen

A tar named McVitty etched ship on whale tooth, part of Gould scrimshaw collection on display.

handled harpoons and tubs of light line to pay out over the smoking gunwale when the "sparm" sounded, and murderous barbed irons to bring blood to his spout when he breached again. On the wall is a view of a whaling scene, copied by computer from the New Bedford Whaling Museum's famed panorama. Log books of whaling skippers are displayed, the day's kill tallied by whale silhouettes stamped on the pages: "Sunday, August 30, 1846 . . . Took down the Foresail repaired it—put new Jack Stays to the yards and bent it again. At 5 saw more whales. . . ." All the while, songs of the bad old whaling days fill the room: "Come



Special projector adds authentic tattoo designs to manikin of seaman until he is ornate with

all ye young fellers that's bound after sperm . . ." and so on. Real live singers, incidentally, the Navy's Sea Chanters, give concerts at the hall.

Whaling demanded four-year voyages, often with nothing to do but work on scrimshaw, which became an art form, well represented here. One Nantucket captain, according to William Macy's little book, *The Nantucket Scrap Basket*, was setting out on a relatively brief Atlantic whale hunt when his mate reminded him that he hadn't bade his wife farewell. "Oh well, never mind," replied the skipper, "I shan't be gone more'n a year or so."

Whaling draws crowds, as does the tattooing, with a manikin, stripped to the waist, getting decorated right before your eyes, thanks to ingenious camera projection, in the tattoo parlor. The art on the walls and the many objects on display—fine china, for example, from the Asiatic trade—draw plenty of viewers. But the largest throng is sitting on the floor in front of the screen that depicts disasters at sea.

Here is a series of film clips from the grimmer moments of some of Hollywood's nautical epics. You see the ship's orchestra of the "unsinkable" *Titanic* playing *Nearer My God to Thee* (which it really did *not* play) as the great, stricken liner slips under, carrying Clifton Webb in his dinner jacket. The crew of the Gloucester fisherman *We're Here* watches in helpless

Edwards Park is a SMITHSONIAN *columnist and editor.*

flowers and hearts, flags and anchors. Chanteys, meanwhile, ring out from the tattoo parlor.

horror as Manuel—Spencer Tracy—is dragged to his death (an event which Kipling did not write in *Captains Courageous*). And Moby Dick sounds, festooned with the harpoon lines that have snared the drowned corpse of Gregory Peck—except for that one arm that beckons in death for his aghast whaleboat crew to follow. (And I don't remember Captain Ahab's death being quite so, well, *Gothic*.)

There are more chilling scenes, all grand viewing nonetheless. Fittingly enough, adjoining the film area is a complete, life-size underwriter's office, furnished and ready to do business. Just had a sea disaster? Well, then, here's your friendly underwriter ready to pay off.

Of course if you got rescued from your watery catastrophe, it might well have been thanks to Joseph Francis' "life car," a sturdy, all-metal, capsulated lifeboat designed for use from shore rescue stations.

If you recall the grand days of ocean liners, all but gone now, you'll find reminders of them in another area of the hall. Here a stained-glass skylight filters light upon the ornate frieze that surrounds it. This comes from the old *Majestic* of the 1880s. Under it is one of Maritime Hall's two most splendid models: *Philadelphia*, another 1880s liner, reproduced down to the hinges of its deck chairs. And all about on the walls are paneling and decor from the fabulous *Leviathan*, the pre-World War I German liner that the United States "liberated" and the first luxury liner to sail under our flag (SMITHSONIAN, November 1973).

Napoleon III presented this bejeweled snuffbox to Joseph Francis, inventor of the "life car."

From the graciousness of First Class (there's the Duke of Windsor's place setting from our last great American liner, *United States*) to the efficient, polished, no-nonsense environment that makes a ship go is an easy step. You enter the "steel"-ribbed deckhouse of a real vessel, S.S. *Oak* (p. 152). Deck beams arch gently over your head, and portholes give you a view. Beneath the deckhouse is the engine room. A sign down there reads: "NO CLOTHS OR RAGS SHALL BE HUNG IN ENGINE ROOM ANYPLACE ANYTIME," and from it is strung a line hung with rags.

The theme of American inland waterways gets full treatment in Maritime Hall, just as it deserves to, for our skein of rivers and lakes first opened the wilderness, then provided communication and trade. Special vessels were needed for rivers, and so, in 1804, John Stevens (SMITHSONIAN, October 1976) built a small steam engine to power *Little Juliana* on the Hudson. You'll find that engine here—America's oldest surviving steam power plant. It turned two counter-rotating

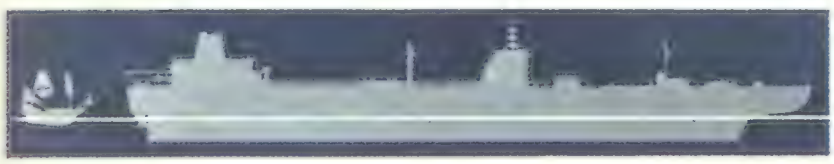
screws. Near it is the second truly fabulous model—the riverboat *J. M. White* (opposite), which put the same power to more sophisticated and effective use in Mark Twain's day. It is a beautiful steamboat-Gothic structure with luxurious appointments. Aboard, the food must have been sublime, the company elegant. Travel reached a height of graciousness.

Of course there was always the possibility of the vessel grounding on a sandbar, ripping her bottom out on a snag, bursting a faulty boiler and blowing up, or of the leisurely traveler winning one too many hands of three-card monte and getting shot by one of the professional gamblers. But what a way to go!

What's river boating like today? In the center of this area stands the complete pilothouse of a modern river towboat, M/V *Herman Pott*. Inside you find yourself facing the steering levers, the radar screen and other devices that make life on the Mississippi easier for a pilot. A view of the river unfolds before you, projected on a screen, and in your ears is the voice of an old river hand explaining what's going on.

The hall ends its winding tour of themes with the triumphs and problems of the more recent times of our merchant marine. Again, there's a film: World War II shipyards going full blast, with round-the-clock shifts of welders and riveters sending sparks flying, with derricks hoisting ship sections into place and finally with Liberty ships splashing down the ways. And the voice behind all this action is that of FDR, urging the nation to get cracking and win the war. Those who remember him will have a niggling urge to do what he says. Why haven't we had another President who could *talk* like that?

A manikin dressed like a modern merchant seaman is actually a sculpture of ex-merchant seaman and Smithsonian staffer Richard Anthony Day. There's a little more of this personal touch, too, in the Hall of American Maritime Enterprise (known to its own staff as HAME). For example, the tattoo scene—"Professor Makovenyi's Artistic Tattooing." Could it be mere coincidence that the designer of HAME is Nadya Makovenyi? And the names of tattoo artists Post, Klose and Bruton? Strange that Dr. Robert Post is curator of the hall, having taken it over from Dr. Melvin Jackson who started the whole concept years ago, before his retirement. Strange, too, that Claudine Klose and Peggy Bruton were Post's abettors. There were also John Stine, Chuck Rowell and Frank Roche, working long and hard on the displays. I couldn't find their names, but am told that they appear as signatories to receipts scattered on the desk in the tobacco warehouse, as do the names of others who helped with HAME. It is fitting that everyone who put this nostalgic, salty exhibit together should sign his work.



Model of mighty *Manhattan* which navigated through the famed Northwest Passage in 1969 shows her icebreaker bow. In silhouette (left), her size, like that of all models, is compared with *Mayflower*.

The riverboat *J. M. White*, modeled in detail down to her cotton bales, evokes life on the Mississippi.

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By Jane Ross

Henry Thoreau a woman hater? Well, not really

The Sage of Walden was no hermit; he liked bright female company, but he fell deeply in love only once

"Thoreau, the misogynist Yankee
Claimed that women and girls made
him cranky;
So both brunette and blonde
He barred from his pond
To make sure there was no
hanky-panky."

So wrote the New York humorist Balzac Schwenk, reinforcing poor Henry David Thoreau's reputation as a solitary bachelor who paid scant attention to women. His friend Ellery Channing is said to have mentioned to Henry a beautiful girl he knew in Thoreau's hometown of Concord, Massachusetts.

"Is she the one with the goggles?" Thoreau answered disparagingly.

Indifferent to women or interested? Instances of both attitudes crop up in Thoreau's *Journals*. For the hermit of Walden Pond was surrounded all his life by women with whom he enjoyed warm relationships. Some he admired, some he did not like at all, some he loved.

Thoreau's mother, Cynthia Dunbar—energetic, talkative, quick-witted and observant—ran a successful boardinghouse and provided a warm, secure home for her family. She also had a sharp and critical tongue and the courage of conviction—

Jane Ross was one of the editors of the book, The Smithsonian Experience.

Courtesy of Concord Free Public Library

Thoreau talks to Emerson's aunt, Mary Emerson, in N.C. Wyeth illustration. He considered this brilliant woman the "wittiest and most vivacious" that he knew. Later, Mary longed for death and slept in a bed shaped like a coffin.

a trait her famous son inherited. She founded the Concord Women's Anti-Slavery Society and was active in the Concord Female Charitable Society. Henry called this group the "Chattables," but was himself the recipient of their charity. The ladies, concerned about his indifference to what he wore, proposed to make him some unbleached cotton shirts but first asked Mrs. Thoreau to find out if Henry would be agreeable.

"Unbleached, mother, unbleached," ruminated Henry. "Yes, that strikes my ears pleasantly; they may make me some."

On hearing the reply, a farmer's wife huffed, "Strike his ears pleasantly, indeed. I guess they will strike his back pleasantly when he gets them on."

Between Henry and the women of his family the bonds of affection were strong, tempered by open expression of emotions and opinions. Once, when he was between teaching jobs, he queried his mother about what he should do.

He might buckle on his knapsack, and roam abroad to seek his fortune, she sug-

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S 78

Courtesy Concord Antiquarian Society

Thoreau's mother, silhouetted here in the style of the day, was a strong influence in his life.

gested pleasantly but very matter-of-factly.

Her rather blunt response brought tears to his eyes and his sister Helen put her arm around him, kissed him and said, "No, Henry, you shall not go: you shall stay at home and live with us."

Quiet and self-effacing, Helen was a teacher and helped pay her brother's college expenses (p.165). She was only 36 when she died of the family illness, tuberculosis. Sophia, two years younger than Henry, became his literary executor (p.164). She published several articles and books from manuscripts Henry left. A talker, she shared his independence and convictions. Once she marched out of church rather than accept Communion when she could not believe in it.

At Cynthia's boarding table Henry could always count on several women. "Here at my elbow," he noted in his Journal in 1838, "sit five notable, or at least noteworthy, representatives of this nineteenth century—of the gender feminine." Among them were Mrs. Joseph Ward, the widow of a Revolutionary soldier, with her spinster daughter Prudence. These women were friends of the Thoreau aunts, a gregarious and chatty lot who fussed over their nephew's indifference to organized religion. One Sunday morning Aunt Louisa Dunbar was

Courtesy National Portrait Gallery, Smithsonian Institution

Henry David Thoreau sat for this photograph in 1856, when he was 39 years old and *Walden* had been published.

shocked to see Henry walking by her church carrying a pine tree for his mother's garden. To his aunt's reproval, he answered, "Aunt Louisa, I have been worshipping in my way and I don't trouble you in your way."

Another aunt, Jane Thoreau, was placid, lovable, slightly deaf and a hearty eater at the family board. By contrast, Maria Thoreau was sharp and loquacious with an opinion upon every subject. She agreed with his mother that Henry was putting things into *Walden* "that never ought to be there." Parts of it sounded to her "very much like blasphemy."

"Think of it!" she complained to Jane at Henry's disinclination to read about a famous theologian. "He stood half an hour today to hear the frogs croak, and he wouldn't read the life of Chalmers."

Embarrassed that Henry was in jail for refusing to pay his poll tax, Maria was probably the heavily veiled person who passed the jailer the tax money. Henry was annoyed when his overnight martyrdom was spoiled. He saw jail as a dramatic way to protest a government that supported slavery.

An occasional boarder was Lucy Jackson Brown, an elder sister of Ralph Waldo Emerson's wife. She became Thoreau's first literary confidante, and though

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she was something of a bluestocking, the two had pleasant conversations while he mended her stove. It is said that she also enjoyed watching him dance. On a romantic impulse one May, when he was 19 and home from college, he tossed a bouquet of violets, along with his poem "Sic Vita," through her open window:

I am a parcel of vain strivings tied
By a chance bond together. . . .

The friendship continued after Lucy had returned to live in Plymouth. He once wrote: "I would deluge you with letters, as boys throw feathers into the air to see the wind take them."

Later he admired Lucy's sister Lidian, Emerson's wife, a gentle, reflective woman. Henry lived with the Emersons for two years, receiving room and board in exchange for a few hours' work each day around the house and garden. Emerson hoped as well to encourage his young friend's writing potential. Emerson, who was as physically inept as Thoreau was agile, was delighted to have Henry weed the garden and mend the furniture. One day when Lidian complained that the hens were scratching out her flowers, Henry soberly made gloves for their claws. A close, platonic friendship developed; he "grows upon me," Lidian wrote to her often-traveling husband.

"Henry is very tolerant"

While teaching on Staten Island Henry wrote two soul-revealing letters to her as "some elder sister of mine." He was unabashed in his praise: "You must know that you represent to me woman. . . ." And, in another letter, "The thought of you will constantly elevate my life." But he embarrassed the shy Lidian. When Cynthia asked for news of her son, Lidian was reluctant to show the letters because she felt that in them Henry had exalted her undeservedly.

"Oh, yes," said Cynthia in a flash, "Henry is very tolerant."

Lucy and Lidian were older, married and safe—women he could cherish from afar. Sophia Ford (or Foord), "dark-skinned, pudgy featured," pursued him all his life.

An active transcendentalist and abolitionist, she had her own bedroom and a school in Emerson's barn to teach the neighborhood children. Henry built her a chimney to keep the room warm, but Sophia held no charm for him. Soon after

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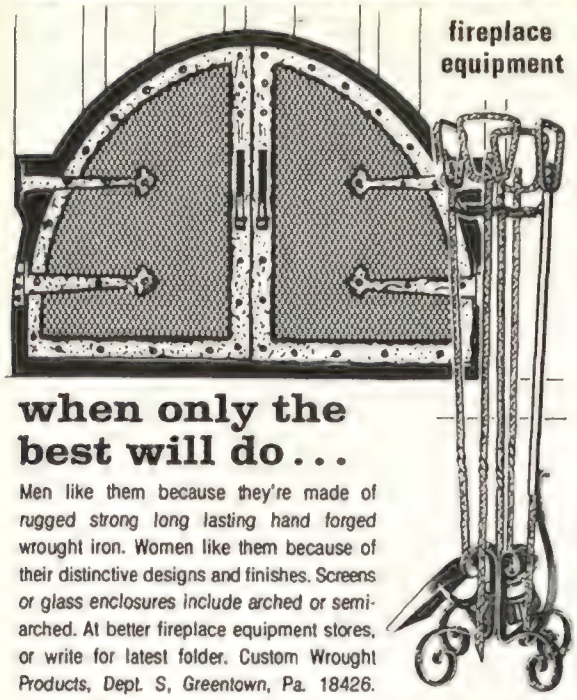

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Courtesy Ralph Waldo Emerson Memorial Association and Houghton Library

Ralph Waldo Emerson's wife Lidian was idolized by Thoreau, who was years younger. He probably felt "safe" with her.

leaving Walden Pond, he wrote of her in dismay to Emerson, who was abroad: "I have had a tragic correspondence, for the most part all on one side, with Miss Ford. She did really wish to . . . marry me. . . . I sent back as distinct a *no* as I have learned to pronounce. . . . *There was no other way.*"

Two years later Aunt Maria heard gossip that the frustrated Sophia was going to commit suicide on account of Henry. "Do you recollect what I told you of Miss Ford and H-," she wrote a friend, "well I do believe she must be crazy. . . ." No suicide occurred, but there were subsequent incoherent letters. Sophia told a friend that she believed Henry was her "soul's twin" and that at least in heaven they would be united.

Margaret Fuller, chic, brilliant daughter of a Massachusetts Congressman, was the first editor of *The Dial* (p. 166). Emerson and Margaret were at loggerheads over Henry because Margaret was not so sure that the magazine should be a vehicle for his genius. She did not like his poems or some of his prose. About Henry's essay "The Service," which he had labored over for more than a year, she wrote: ". . . the thoughts seem to me so out of their natural order, that I cannot read it through without pain." But she also found it "rich in thought."

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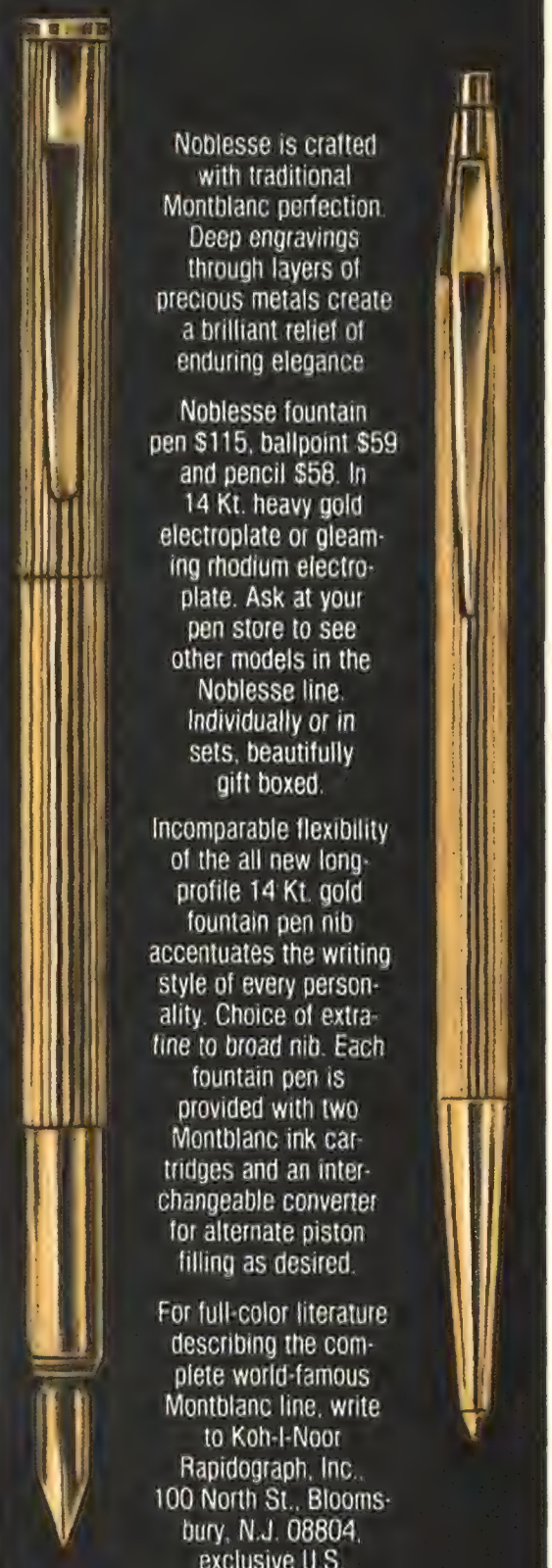

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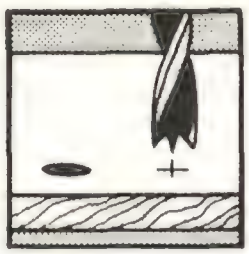

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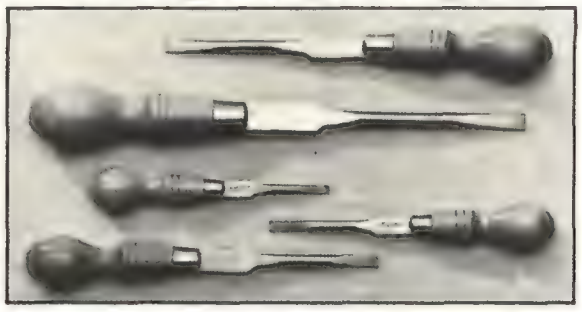

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Sophia Thoreau, his youngest sibling, took care of Henry's work after his death, had "charm far ahead of . . . beauty."

The two often met at Emerson's. Margaret wrote her brother about Henry: "He has a boat which he made himself, and rows me out on the pond." Yet the two strong individualists did not get on well. The rumor bandied by gossips that the sleek, fashionable Margaret was engaged to the Concord rustic was no doubt apocryphal. "In the first place," he is supposed to have said, "Margaret Fuller is not fool enough to marry me; and second, I am not fool enough to marry her."

After leaving *The Dial,* Margaret joined Horace Greeley's New York *Tribune* to become the paper's first literary critic. In Europe during the Italian revolution of 1848-49, she wrote letters describing the situation for *Tribune* readers. Returning to the United States in 1850, her ship was wrecked off Fire Island, New York. Her husband, the Marchese Ossoli, whom she had married in Rome, and their son were drowned and she was last seen sitting with her back to the foremast; there she stayed until a great wave washed her overboard. At Emerson's request, Henry made the grisly trip to recover her body and her manuscript about the revolution. A shift with her initials on it was found, and some other clothing, but nothing else.

Apparently, true love came to Thoreau but once. She was Ellen Sewall of Scituate, Massachusetts, a beautiful 17-year-old (p.170). For two weeks she visited the

Courtesy Leonard F. Kleinfeld

Helen, Henry's older sister, taught school and helped pay his college costs. She died of tuberculosis—as did he.

Thoreaus and her Aunt Prudence Ward. She was a stunning girl with a sparkling personality. Her long, shiny hair, parted at the center, was becomingly drawn around to the back of her neck. Before the first day of her visit was over, Henry, then 22, had fallen in love with her. So had his brother John.

"I can not tell you half I have enjoyed here," Ellen wrote to her father while basking in the attention of the two bachelors. There were berrying trips, walks and boating on the river. Aunt Prudence chaperoned. Henry took Ellen to see a giraffe in a tent show. And at night the fun was often phrenology—"reading" the bumps on one another's head. One night, Henry felt for bumps on Ellen's and declared that she had none. The party burst into laughter, for this could only mean that Ellen was either a genius or an idiot.

Only once did he refuse to cater to her wishes. One Sunday she asked him to go with her to church. He explained that all outdoors was for him a church. And, not surprisingly, she prompted poetry from deep within him:

One green leaf shall be our screen,
  Till the sun doth go to bed,
I the king and you the queen
  Of that peaceful little green,
Without any subject's aid.

Ellen did not want the visit to end, and when it did she cried in the stagecoach all the way to Lexington. In a letter to

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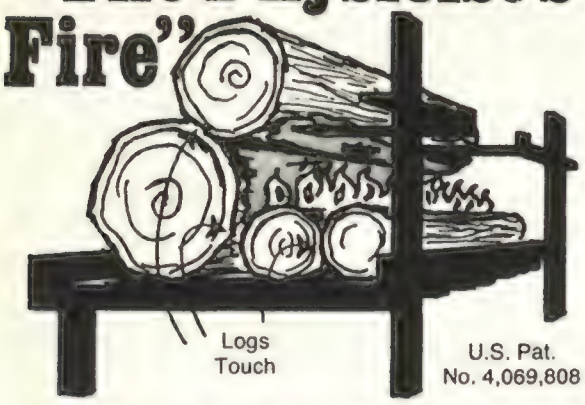

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Courtesy Constance Fuller Threinen

Margaret Fuller, editor of *The Dial,* disliked Thoreau's work, rejected most. Romance between them was improbable; she wed in Italy, died in a shipwreck.

Aunt Prudence she noted that the visit was one of the happiest times of her life.

Within the year, John proposed to Ellen. She accepted, then turned him down, realizing that it was Henry she preferred. Henry's letter of proposal followed, but Ellen's father, strongly disapproving of transcendentalists, told her to reject him. "He wished me to write immediately in a *short, explicit,* and *cold* manner to Mr. T," Ellen noted. "I never felt so badly at sending a letter in my life."

Ellen married a Unitarian minister, and Henry visited them in their Cohasset home. Shortly before he died, sister Sophia mentioned Ellen's name in his presence. "I have always loved her. I have always loved her," he murmured.

One other pretty girl caught Henry's eye: Mary Russell, a governess at the Emersons' the summer of 1841, when Henry lived there. Talking to Mary, he wrote, was "like talking to the clouds." But Thoreau's Harvard classmate, Marston Watson, ultimately won Mary.

That romance was Thoreau's last. Until he died at 44, he played the role of confirmed bachelor. Nature, not women, received his passionate care, and marriage came increasingly under his fire. "There,"

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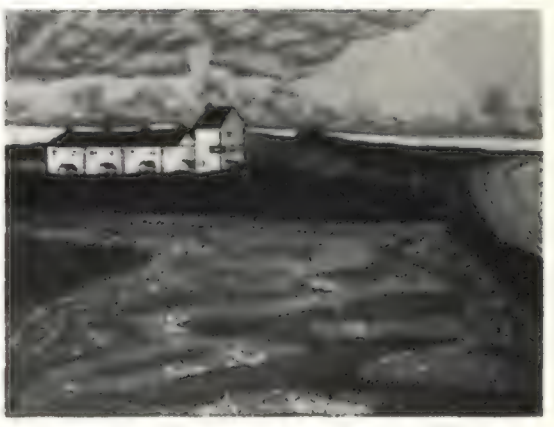

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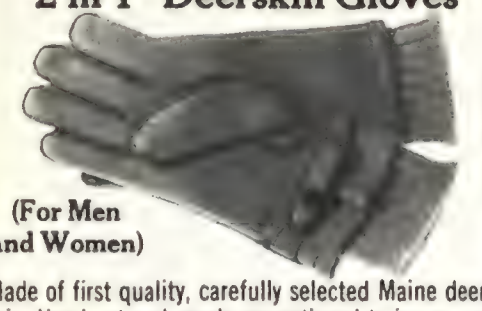

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Caroline Dall, married to one of Henry's Harvard classmates, was an ardent feminist, impressed him with her views.

he exclaimed as he vehemently kicked a skunk cabbage while walking with a friend, "marriage is like that." (His friend may have been aware, however, that Thoreau had a certain fondness for the skunk cabbage.)

He once complained about a party: "It is a bad place to go—thirty or forty persons, mostly young women, in a small room, warm and noisy. Was introduced to two young women. The first one was lively and loquacious as a chicadee; had been accustomed to the society of watering-places, and therefore could get no refreshment out of such a dry fellow as I. The other was said to be pretty-looking, but I rarely look people in their faces, and, moreover, I could not hear what she said, there was such a clacking. . . ."

Yet when he knew a woman, he could appreciate her. Caroline Dall, married to a Harvard classmate, and a feminist in the mold of Margaret Fuller, came to Concord to lecture in December 1859. Henry told Emerson he would stay away for he thought women never had anything to say. He changed his mind, however, and did come, albeit late, sitting on the end of the last bench by the door, even though he had been on the river all day. Perhaps the fact that this outstanding feminist modeled her life on that of Margaret Fuller influenced him.

"Why, Thoreau, I thought you were not coming," Emerson said.

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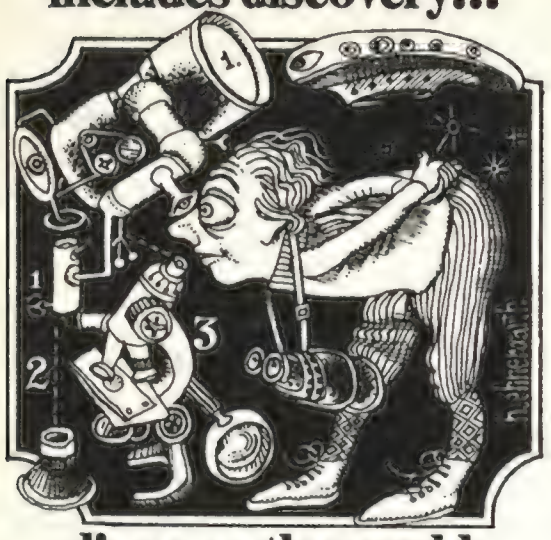

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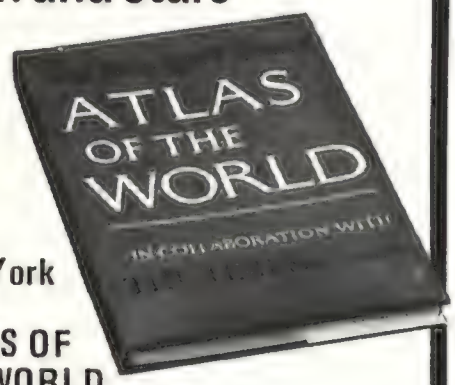

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"But *this* woman," said Henry, "had something to say."

Mutual appreciation developed. After the lecture, he persuaded her to stay in Concord for the next day with him and his family. Henry charmed her and she recalled that visit as one of the most memorable days of her life.

Thoreau considered Mary Moody Emerson, brilliant aunt of Ralph Waldo Emerson, the "wittiest and most vivacious woman that I know," despite her strong, orthodox religious beliefs (p.159). He read his manuscript of *Walden* to her, and found her capable of a "masculine" appreciation of poetry and philosophy. She enjoyed the affectionate friendship as much as he.

An eccentric in her later years, Mary longed for death and had her bed made in coffin shape. She prepared a shroud, but since she did not die as soon as she anticipated, she wore out several of them, preferring to use them as dresses rather than see them wasted. Mary provided one of the only recorded comeuppances to the outspoken Cynthia Thoreau.

When Thoreau's mother was 70, she donned a bonnet with bright yellow ribbons and paid a call on Mary. Her hostess kept her eyes tightly shut during the conversation. As Cynthia got up to leave, Mary explained that she had closed her eyes "because I did not wish to look on the ribbons you are wearing, so unsuitable for a child of God and a person of your years."

When Thoreau lay dying, he was surrounded in death as in life by supportive women. But he was his own man to the last. Aunt Louisa gently asked him if he had made his peace with God. Henry replied in mild surprise, "I did not know we had ever quarreled."

Courtesy Concord Antiquarian Society

John Thoreau, Henry's younger brother, also loved the beautiful Ellen Sewall.

Ellen Sewall, Thoreau's only "true love," won his heart during Concord visit when she was 17. But when he proposed, she obeyed her father and refused.

Courtesy Mrs. Gilbert S. Tower

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Although liability insurance is required by law in many states, in light of the trend toward higher settlements, you should be sure that your coverage is adequate.

But in the "voluntary" parts of your car insurance—collision and comprehensive (fire and theft)—that cover physical damage to your own car, there are some things you can do to lower your insurance bill.

Safe drivers pay lower premiums for both liability and collision coverage. Insurance rates are set that way because drivers with a good past history are less likely to have accidents in the future. Many insurance companies define "safe drivers" as those with two or less moving traffic violations and no "chargeable, at fault" accidents within the past three years. Their premiums may be as much as 25% lower.

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Of course, you assume more of the risk by choosing higher deductibles. It's a personal decision that should be based on a thorough evaluation of the age of your car, the value of your car on the used-car market, and your own financial situation. If your car is more than five years old, it may not pay to buy any collision insurance. If you do have an accident, casualty losses over $100 that are not reimbursed by insurance coverage are tax deductible, in many instances, providing you itemize your tax return.

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This strange wave rippling across Okanagan Lake was the undulating Ogopogo, says Ed Fletcher, who photographed its spooky progress.

By Mary Moon

Ogopogo, Canada's lake monster: oft seen, never snared

Like the Loch Ness creature, it may not exist—but British Columbians claim 'sightings' for three centuries

Edward Fletcher of Vancouver, Canada, hastily shut off the engine of his high-speed runabout on August 3, 1976, to avoid colliding with "a garter snake blown up to 70 feet long." The boat bearing Fletcher and his daughter Diane, 14, across Okanagan Lake at Westbank, British Columbia, drifted to within 15 feet of "a strange creature" swimming with a flattened spiral motion. They were encountering the phenomenon called "Ogopogo," North America's version of the Loch Ness monster.

Fletcher stared at one four-foot hump as it passed, then raced back to shore for a camera. Back in the water, spotting "a strange wave" of the kind reported many times at Westbank, Fletcher shut off his engine and took photographs that recorded a giant serpent—or something. Filming bubbles it made when submerging, he got a disturbing picture showing something swimming under his boat, its long neck and blunt head raised in the distance (pp. 182-183).

Eleven months later, Erin Neely came too close to Ogopogo and went into shock. On July 2, 1977, she was water-skiing, saw Ogopogo as she approached it, dropped her towline and fell flat in the water. The thing underneath her, three feet away, gave her the distinction of tying Ernest A. Lording of Kelowna for first place in coming closest to Okanagan Lake's natural history mystery.

Other recent sighters (as with UFOs and Bigfoots or Sasquatches [SMITHSONIAN, February 1974], Ogopogo encounters are called "sightings") were Betty and Harry Staines of Westbank. On November 5, 1977, they glimpsed it near the west end of the mile-long bridge from Westbank to Kelowna. They were the latest among thousands to see something strange in this narrow, 80-mile-long lake in southern British Columbia.

Both Okanagan Lake and Loch Ness in Scotland are long, narrow, deep cold-water lakes in beds carved out by Ice Age glaciers. Both are set in natural wind tunnels, with the main axis oriented in the direction of the dominant winds. Both lakes' "monsters" are credited with high-speed, undulating swimming, pulling on fishing lines, being green-brown-gray-or-black and having strange humps.

The heads of both have been compared to those of horses, seals, sheep and snakes. Both have been "seen" rising in still weather, panicking birds and fish, shying at loud noises and venturing boldly near populated areas.

Canada has several legendary giant

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Ed Fletcher in boat from which
he photographed the "lake demon."

snakes: Caddy at Victoria, British Columbia; assorted sea serpents around the southern half of Vancouver Island; Manipogo in Lake Winnipeg, Manitoba; and "La Bête" (the beast), or Ponik, in Lac Pohenegamook, Quebec.

Okanagan Valley residents and visitors alike have been fascinated by Ogopogo for three centuries. In the late 1770s the Okanakane Indians carved huge likenesses of their water god, Ogopogo, for ceremonial canoes. They called him *Naha-ha-itkh,* holy serpent of the water.

Before crossing the lake anywhere, the Indians put a small pig, dog or chicken in their canoe. Should the water god appear, the living sacrifice was supposed to distract him. Naturally, there is an Indian legend about Chief Timbasket, a scoffer who paid with his life. He brought his family up from what is now Washington state to Westbank, where other Indians made "big medicine" before canoeing to Penticton—they painted signs on prows and collected small animals to sacrifice.

Timbasket scorned their outmoded ways. Passing Squally Point, he defiantly chose to travel close to the traditional island home of the water god. Suddenly the lake demon rose and lashed the lake into a storm with his tail. Timbasket and his family were sucked under by a great swirl of water, never to be seen again.

The author, a Vancouver journalist, wrote a book, Ogopogo of Okanagan, *on the "monster" that she too has sighted.*

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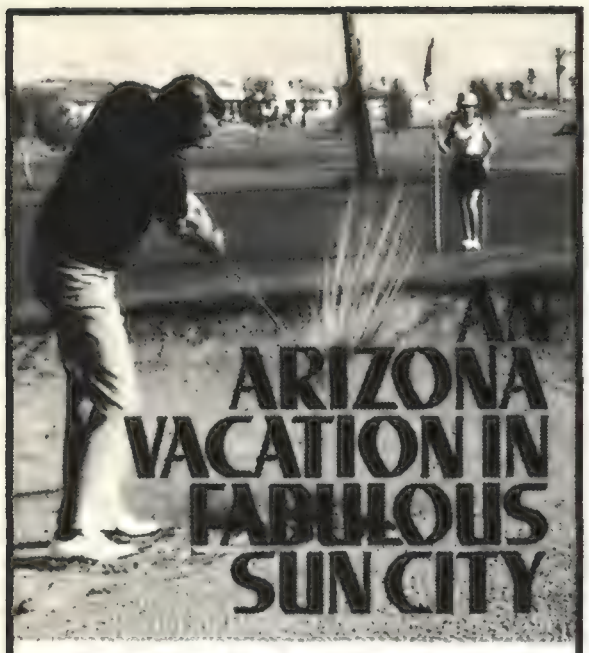

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OGOPOGO'S HOME
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Ogopogo still is seen each year—but now by white men!

Okanagan Lake, where people keep sighting the not-so-invisible Ogopogo.

Years after, so it is said, his shattered canoe was found on the shore by an Indian hunting party.

Indians gave the creature other names besides *Na-ha-ha-itkh,* variously translated as water god, lake monster, lake demon, sacred animal in the water and snake in the lake. In Chinook, the 18th-century Esperanto of the Pacific Northwest, the creature had two names: "the huge animal in the lake" and "the wicked one in the lake." Among Caucasians the official name became Ogopogo in 1926 when an English music hall song with that title became popular in the valley.

In Vernon's Polson Park, Ogopogo's serpentine form spouts water as a fountain (p.178). At Ogopogo Corner in Kelowna there is a snakelike statue painted green, with forked, red tongue, pointed ears, horns and dorsal fins (p. 180). A sign states that Ogopogo's story is centuries old, scores of reliable witnesses have seen him, he may be 70 feet long with a horse's head, and the law protects him.

A hundred years ago, Mrs. Susan Allison watched for the return from Okanagan Mission of her husband, John Fall Allison, and their son Edgar, as she stood on a bluff on their ranch at Westbank. An overnight storm had abated but a strong wind was blowing toward the south end of the lake. She noticed a "huge tree trunk or log floating on the lake," but decided it was really a reptilian creature swimming north against wind and current. (This was the first of many "logs that came alive" stories.) Her husband did not take her story seriously, saying everyone had laughed at some fellow who came to

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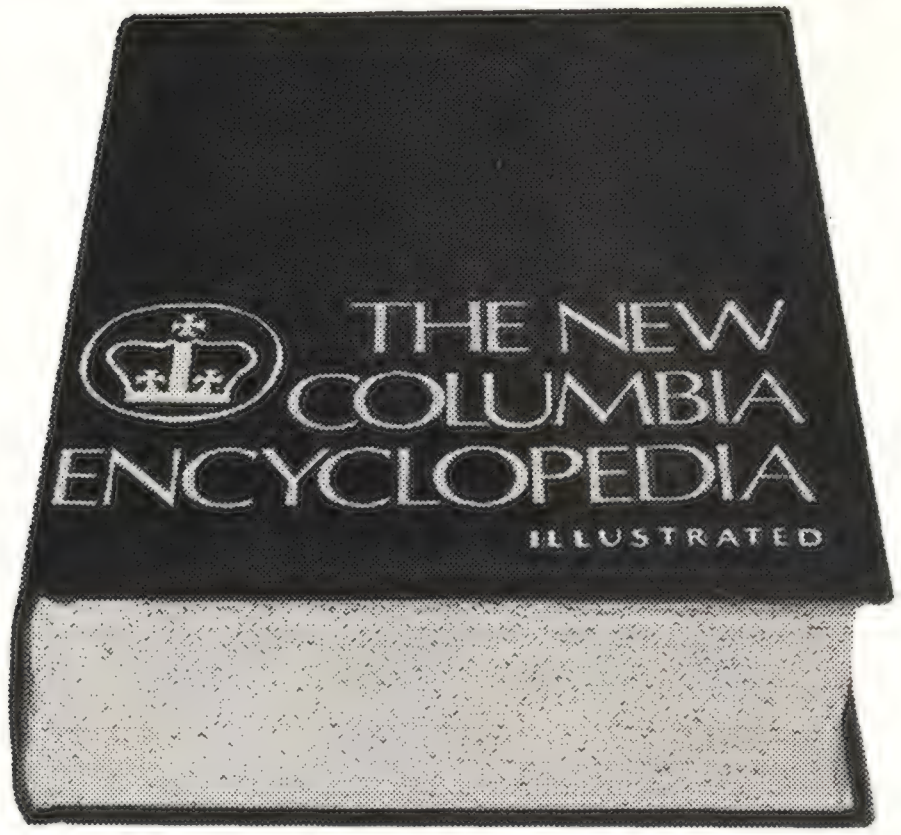

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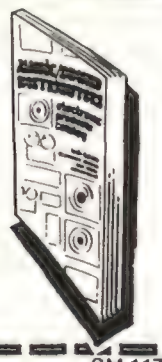

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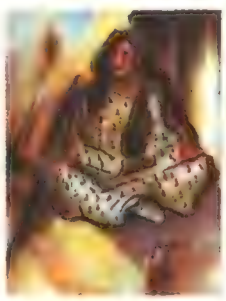

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The lake monster's likeness adorns fountain in Polson Park, Vernon.

the mission and reported the same thing.

At the turn of the century, Mrs. Ruth Richardson of Cashmere, Washington, was a child of ten. Playing on a beach near her family's summer home at Okanagan Landing, she saw Ogopogo peering at her from a distance. Then it submerged and bobbed up again *much* closer and stared at her again. She fled into the house. Visiting Vernon in 1968, Mrs. Richardson refused to go out on the lake in a boat "for any money."

In the early 1900s, Hubert Bertram Daniel Lyson of Kelowna was fishing near Squally Point when something took hold of his line. His boat was dragged partway around Rattlesnake Island, as they called Ogopogo Island in those days. (An Indian would have cut the line immediately, knowing it was the water god.)

In the 1920s, Ogopogo was often seen by captains, crews and passengers on the stern-wheeler steamships and tugs that plied Okanagan Lake. Today most of the action is at Westbank, scene of the first recorded sighting in the mid-1870s.

In September 1925, hunting parties were formed in six Pacific Coast centers, including university campuses. In July

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In the city park at Kelowna this "official" sculpture of the fabled Ogopogo rests near waters where the monster—or whatever—is sighted.

of the next year, it was reported by the *Vancouver Province* that "two or three unnamed Summerland sportsmen are lying in wait with rifles" to kill Ogopogo. In August the same newspaper revealed that "two unnamed young men from Ashcroft, British Columbia, are on the west shore, intending to kill Ogopogo with rifles." Perhaps somebody warned the monster; it didn't show up.

That same July, lifelong nondrinker John L. Logie, a pioneer settler in Summerland, "raced" Ogopogo at 30 mph for several miles along the west shore. With Logie in his car were his wife, Isabella, and their grandchildren, Catherine, 13, and Robert, 11. The "race" became a draw when the road went uphill and the water creature turned away from shore. Logi said it was 20 feet long, with a head that looked like a bulldog from the back and like a sheep from the front.

Controversy over the identity of the Ogopogos has raged for years and each theory has its own enthusiastic supporters. The all-time favorite is the several-sturgeon-swimming-in-line theory. Its adherents point to the 900-pound, 13-foot-long sturgeon caught in British Columbia's Fraser River. Detractors shoot that down by remarking that sturgeon are bottom-feeders and do not come up.

A half-century ago the possibility of the Ogopogos being manatees or sea cows was hotly debated. But a manatee is only 12 feet long at most and slow-moving, whereas Ogopogos have been seen swimming faster than motorboats can travel.

The question of whether they might be plesiosaurs, prehistoric land animals that returned to the water, also has been raised. Descriptions of the Loch Ness monsters do suggest that they might be plesiosaurs, but the shape, size and behavior of the Okanagan creatures indicate they may be landlocked sea serpents.

Many are sure there is more than one Ogopogo because they have reported more than one. Two creatures chasing each other were seen by 15 bus passengers 28 years ago when driver Gordon Radcliffe pulled his vehicle to a sudden stop north of Summerland. Radcliffe told me, "I do believe there are still many creatures on this earth that have not been seen by human beings. Also, who ever heard of there being only *one* of any living creature?"

Donald M. Nourse, a Penticton bus driver, saw four ten-foot "things" in the water late in February 1948. He hastened to pick up his boss, Hugh Wilson, and more passengers—all of whom preferred to be late for work rather than miss seeing "the Ogopups."

Mr. and Mrs. Leslie Kerry of Kelowna, their neighbors Dr. and Mrs. Stanley Underhill, and a number of youngsters all reported two Ogopogos July 2, 1949. A pair of Ogopogos swimming in line were spotted by William Marks near Kelowna a decade later. More recently, the Ed Fletcher and Gary Slaughter families saw two Ogopogos in Westbank Bay on August 3, 1976. Two swimming together were seen in the same bay on July 2, 1977, by

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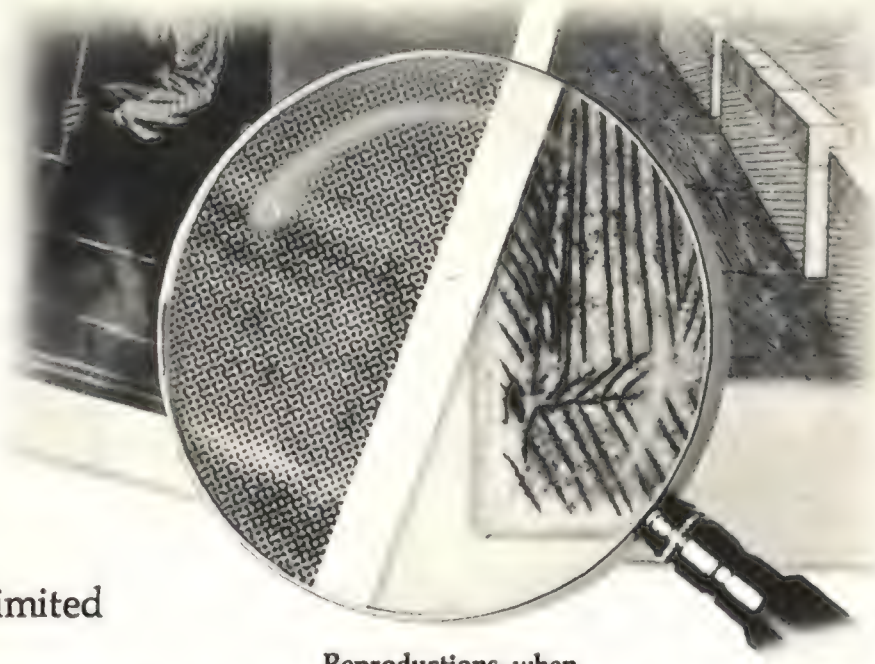

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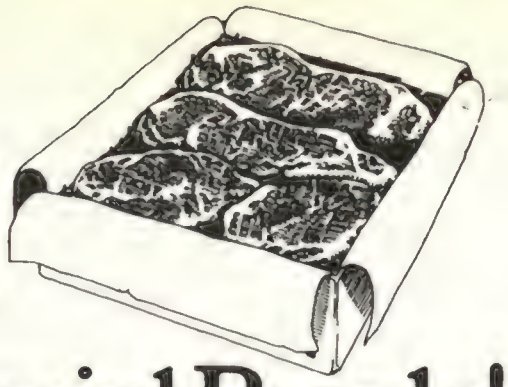

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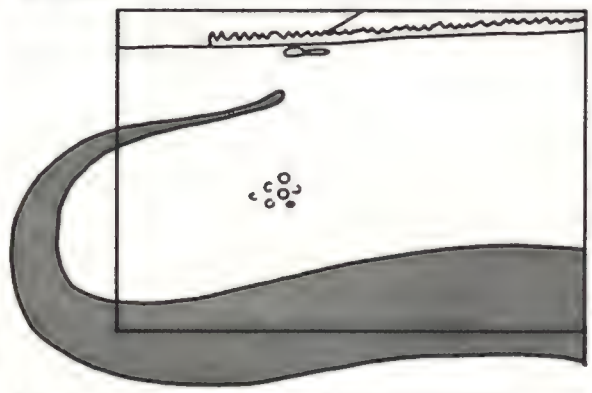

Diagram below shows bubbles rising between huge body in foreground of photograph, and small head curving from left in the middle distance.

Diane Fletcher, Judi Lee and John Hamilton. The same afternoon, Hamilton again saw a pair of huge serpents while Erin Neely was water-skiing.

Some think Ogopogos have feet and walk on land. On July 22, 1949, the small son of H. Faulkner of Kelowna reported big footprints on the beach. Mr. Faulkner examined two clear cup-shaped prints and four smudged ones, all six inches wide. The marks came from the water and reentered it two yards away. Jack J. Fuhr found elephantine footprints around his wharf on April 28, 1960. Some were six inches deep in firm sand where a human foot made little impression.

Albert J. Moore, who has reported Ogopogos three times near Westbank, believes the creatures have short legs. "I saw him kick up foam three feet high and about 30 feet wide when he was swimming away at high speed," he says.

Several years ago, Candace McDougald of Peachland reported an Ogopogo partly out of the water, surveying the land. She found tracks in the sand there, but dared not mention them until years later.

Some of the 20 people who watched an Ogopogo swim near the Kelowna statue on February 22, 1970, thought it was kicking with four feet. And Jeffrey Sherwin of Kelowna wondered in 1976 if Ogopogo had a cave home under water south of Okanagan Lake Bridge. On July 22, he and a group of children saw "a strange-looking wave," 30 feet away, which turned out to be, apparently, a 40-foot-long reptile. Cathy Young, Connie MacDonald, Gail Dalberg, Marnie Hammill and daughter Debbie, all of Kelowna, saw the same thing.

The first serious mass attempt to photograph Ogopogo happened on Saturday, July 23, 1977, when 60 volunteer divers from western Canada kept an all-night vigil at Westbank. Led by Cal and Lorraine Bevans, who run a scuba-diving school in Kelowna, divers took turns waiting in an animal cage 20 to 30 feet below the surface. High-powered aircraft landing lights illuminated the depths so movie and still photographers could take Ogopogo's picture the very second he appeared. A half-hour documentary film of the hunt was made by a crew from CHBC-TV, Kelowna. But, for all their trouble, nothing was sighted.

Scientists have been cautious and re-

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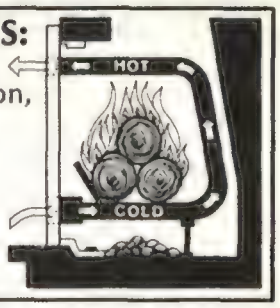

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luctant to look into the Okanagan mystery. Biologist Dr. Murray A. Newman, director of Vancouver's public aquarium, is skeptical about sea serpents and thinks Ogopogo may be a giant white sturgeon or a salamander.

David Stirling, of the Federation of B.C. Naturalists, says: "Ogopogo is an optical illusion produced when an observer views obliquely a bow wave moving across flat water under certain lighting conditions."

"At a time when physicists work with 'quarks' and 'black holes' and attribute properties such as 'charm' and 'strangeness' to subatomic particles, I would not be surprised at anything," is the wry comment of Dr. Stephen R. Kerr, of Maple, Ontario, coauthor of a scientific paper called "The Population Density of Monsters in Loch Ness."

William N. Eschmeyer, curator of the Department of Ichthyology at the California Academy of Sciences, San Francisco, prefers the plesiosaur theory. "The discovery of a 'living fossil' coelacanth fish in 1938 was roughly comparable to finding a dinosaur walking around in your backyard. I guess anything is possible."

When can you see an Ogopogo? During hot, calm "Ogopogo weather," as did 30 parishioners of a Kelowna church on July 29, 1962, during their annual picnic. The James Campbells, the Leonard Campbells, the Ernie Cowans and the George Vetters, with several children, were among those who watched Ogopogo moving "like a caterpillar." Ernie Lord-

From a hillside on the lakeshore, a long series of well-defined

ing told me it is difficult *not* to see an Ogopogo during "the dog days," early July to September.

Watch for a long, high wave where none should be in a glassy lake. I did, at Westbank on Thursday, November 3, 1977, while Indians recited the Ogopogo legend. Sudden waves in calm water had been seen by the Reverend W. S. Beames at Naramata years earlier. "It was like a huge garden hose thrashing about in the water," he said afterward.

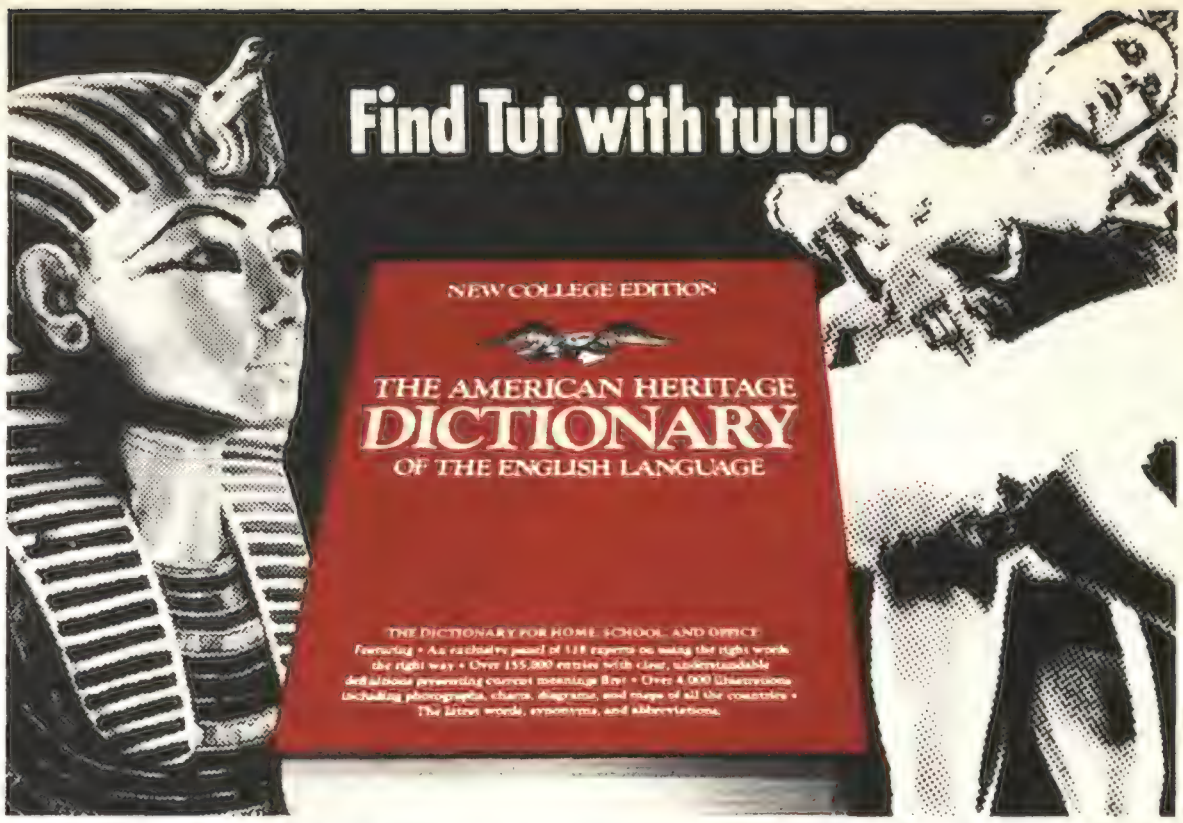
Ernie Lording, who has claimed many sightings, once said, "If you're out on the lake in a boat on a calm day, watch for a 'vee' in the water and follow it. He's been seen traveling at eight knots but he can do 30, so you have to be quick if you want to catch up with him."

"Ogopogo doesn't appear when you're looking for him. He surprises you," says Connie W. Marlow of Kelowna. She ought to know; he has surprised her twice—in early July 1968, and August 12, 1969.

But if you want to see an Ogopogo, you had better hurry. The British Columbia government is using a defoliant (as was used in Vietnam) to kill Eurasian water milfoil weeds in Okanagan Lake. Heated argument has raged for and against it.

Many residents fear the poisoning of their drinking water, contamination of the fruit for which the Okanagan Valley is famous, and the scaring away of tourists upon whom part of its economy depends. Others dread the killing of lake wildlife, including Ogopogo. If there is such a thing.

waves is seen breaking calm waters.
Ogopogo? Nobody knows.



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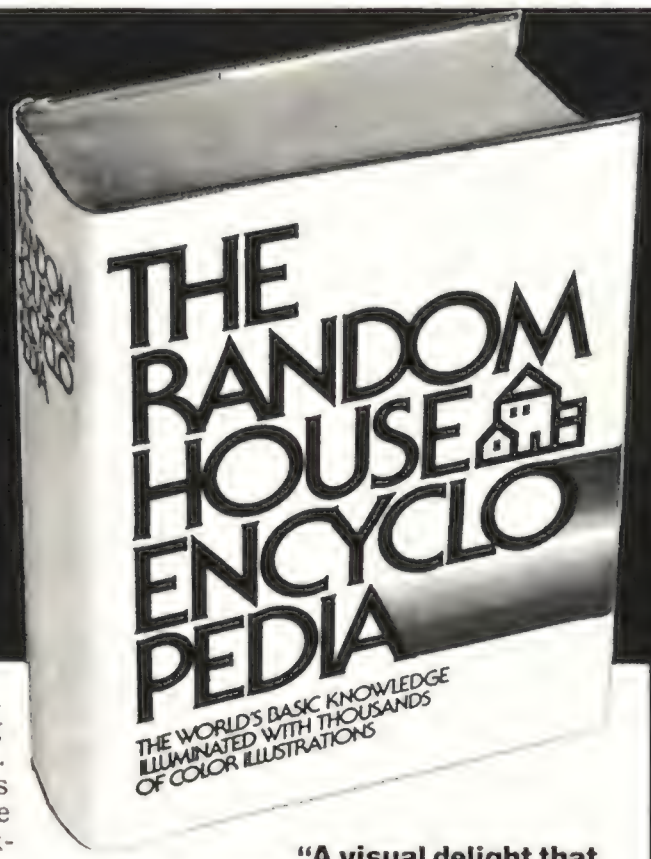

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Book reviews

Court House: A Photographic Document
Richard Pare, editor; conceived and directed by Phyllis Lambert
(Horizon Press, $35, cloth; $18.95, paper)

What does it mean to look at a building —for instance at a county courthouse? When and why do we even notice these so-called "houses of justice?" Often tattered relics of the past, they represent a

Beaux-Arts courthouse (1891) in Evansville,

time when public authority was less questioned, when communal virtue was more taken for granted. On a mundane level, they embody our judicial system in its petty permutations.

To enter a courthouse can be punishment in itself. A maze of corridors painted institutional green promises endless frustration at the hands of the resident bureaucracy. Other parts of the building instill fear, tension, sorrow, boredom, claustrophobia. There is also the jail. Without disavowing such connotations, *Court House: A Photographic Document* explores the county courthouse from another angle as well: its pictures and text blend into a celebratory odyssey through the sheer beauty or the sheer ugliness, the symbolism and the realities of these "particularly American buildings."

This stunning assemblage of the work of 24 photographers, funded by Joseph E. Seagram & Sons, includes a number of essays which help bolster a search for the "image" of the county courthouse. The views projected by photographs and commentary alike are the children of metaphor, created, in large part, by the nature

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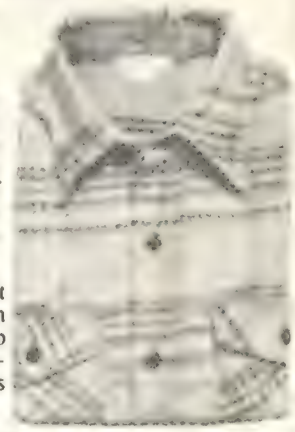

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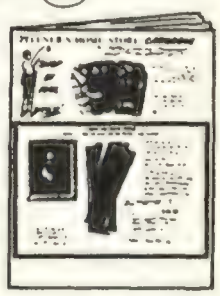

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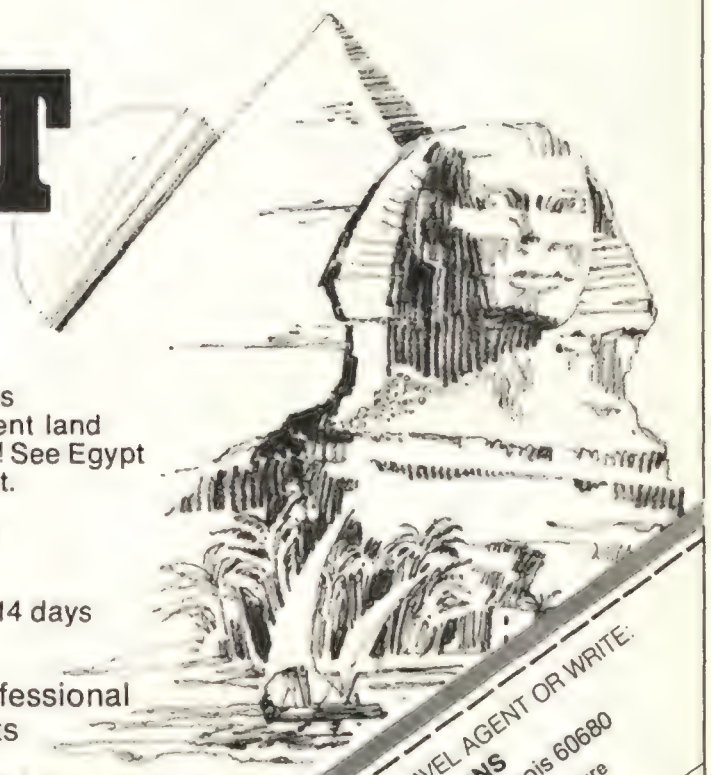

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of the subject. The book is less a "document" than an exercise in reverie and candid reflection. As a collaboration between sights and insights, it encourages flights of fancy, esthetic delight and historical musing.

An essay by Paul C. Reardon ("The Origins and Impact of the County Court System") is laced with bizarre trial information. And Calvin Trillin ("County Thoughts") recalls a reporter's experiences covering courthouse life.

The scholarly and occasionally provocative "Notes on the Architecture" by architectural historians Henry-Russell Hitchcock and William Seale analyze the historical and stylistic developments. The history of the county courthouse, according to them, is the history of the country itself, with all its regional differences from East Coast Greek Revival to Texas "brutality" and Hoosier Beaux-Arts. While sanguinely identifying "openness and free spirit of design" as typically American, they take care to discuss the "seamy side" of courthouses built with graft. Via "scraped Classical" and Art Deco, courthouses were transformed from monuments into mere office buildings. As architects' imaginations drifted away from the social significance of these edifices, form and function grew to be at odds; a sense of confidence was gone.

Court House establishes a vocabulary of objects, then extrapolates a symbolism from them; for all their eclectic variety of detail, these buildings have more in common with one another than not. For pure artistic versatility, these pictures are exquisite—a view straight up into the wedding-cake rotunda and dome of the Old Court House, St. Louis, and a barren cloakroom in Vermont. They caress color, shape, texture along a hallway graced only by a Nehi machine; in the pattern made by boards in an old debtors' jail; in the fancifulness of a cast-iron staircase or cherubs on a fountain.

Whether as the old juxtaposed with the new, or even the deserted (by the towns of which they were once the economic and social centers), the courthouses in this book stand on their own. If they are monuments no longer, or tarnished ones, they certainly are statements. Rather than whining about the past, they speak about living history.

—*Celia Betsky*, free-lance critic
and Fellow, American Association
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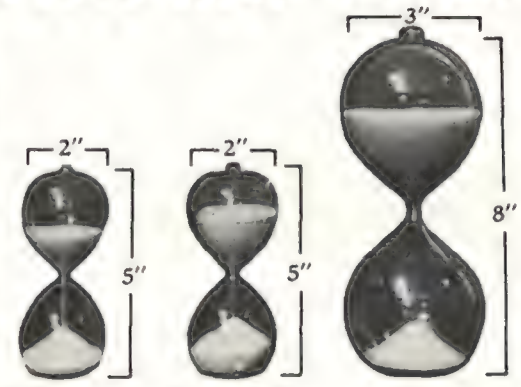

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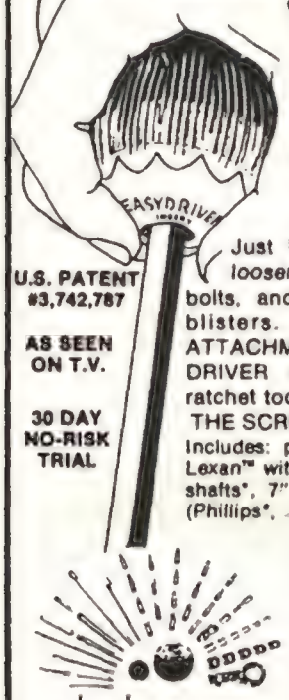

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A Distant Mirror: The Calamitous Fourteenth Century
Barbara W. Tuchman
(Alfred A. Knopf, $15.95)

By any yardstick the second half of the 14th century was a terrible time. War, plague and doubt allied to undermine the edifice of a medieval consensus on the nature of Man and society and left it in ruins. Visions of apocalypse appeared on every side. War between France and England was virtually institutionalized, laying waste to towns and countryside, discrediting nobility and knighthood as guardians of the social order, and leaving a legacy of brigandage and worker and peasant unrest.

The Black Death, seen as God's terminal disappointment in his creation, killed an estimated one-third of Europe's population in its first installment in 1348-1350 and its periodic recurrence cast a shadow of insecurity over the rest of the century. The Great Schism divided the allegiance of Latin Christendom between rival popes at Rome and at Avignon, and many turned away from the ecclesiastical establishment for answers to their spiritual questions.

In her most ambitious work to date, Barbara Tuchman holds up this remote, plague-ridden, war-wracked epoch as a "distant mirror" dimly reflecting the calamities of our own century. Ironically, it is in the decay of an organic, medieval world order that she discovers the seedbed of a modern age of triumphant individualism, the origins of whose decline she has already described in *The Proud Tower* and *The Guns of August*.

In *A Distant Mirror* Mrs. Tuchman skillfully builds a detailed history of Europe in the late 14th century around the course of a single "medieval life"—that of Enguerrand de Coucy, one of the great barons of France. Coucy's remarkable career touched in some degree the most significant events and the most important figures of his generation.

Barbara Tuchman has a nonspecialist's eye for the apparent incongruities of medieval civilization. She is plainly disturbed by the stark contradiction between ideal and practice, and she concludes that the ideals imposed on medieval society were impossible ones which, when regularly subverted in everyday practice, contributed to its disorientation. Deploring the decadence and

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hypocrisies of the age, she most admires those citizens of the 14th century in whom she espies even the faint glimmer of modernity.

Like that of the chroniclers whom she follows closely, the author's art is in her narration. Unsurpassed as a storyteller, she has scoured her sources to provide excursions into topics—medieval childhood, the condition of women, medicine, anti-Semitism, marriage diplomacy, theater, the social effects of the invention of the chimney—that lend color to her panoramic view of those decades. But, appropriately in a history of years so much awash with blood, she makes best use of her considerable talents in depicting the field of battle and in sketching soldiers at their trade.

The code of chivalry—the most puzzling and outrageous contradiction of them all—is for Mrs. Tuchman the self-destructive culprit responsible for French defeats in battle after battle, from which French knights refused to learn that "valor in combat is not the equivalent of competence in war."

A Distant Mirror will not disappoint readers who expect of Barbara Tuchman's work that it will be provocative and superbly written. If it has a serious shortcoming, it is the author's inability to come to terms with medieval "emotional and mental" (*i.e.*, spiritual) values, which she confesses lie outside the limits of her comprehension. This is an unfortunate defect which distorts the crucial element in understanding the Middle Ages, leaving the reader with an essentially secular view that makes modern demands on a unique period.

—*Robert Rinehart*, Foreign Studies staff at The American University

The Theatrical Photographs of Napoleon Sarony
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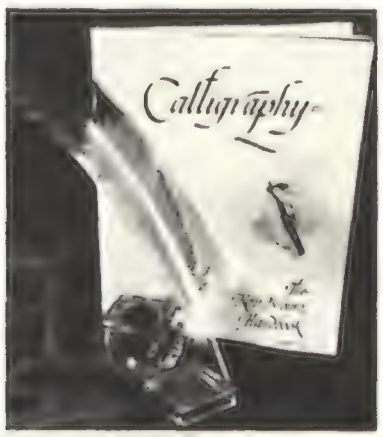

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Sarony's posed, poised Bernhardt, 1880.

theatrical photographer; he was perhaps the greatest American portrait photographer of his time.

His reputation and that of his portraiture have suffered at the hands of modern photographic historians who define the key monuments of American photography of that period as the work of the Western landscape photographers like O'Sullivan, Watkins, Jackson and Muybridge and of the Eastern social reformers like Riis. Ben L. Bassham's book is both the first major work on Sarony and the first major work on 19th-century American portrait photography after the famous Mathew Brady.

Sarony (1821-1896) was an exact contemporary of Mathew Brady (c. 1823-1896), although their careers did not run parallel. Brady had made his reputation by 1850, in the first era of photography; the Civil War cost him his preeminence and he never regained it, although he remained active. Sarony, on the other hand, came to photography after a successful career as a lithographer. Although he had dabbled with a camera before he went to Europe to study art, he became a serious photographer only in 1864 as a

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partner in his brother's studio in Scarborough, England.

Sarony returned to America shortly after the end of the Civil War to open a studio on Broadway in New York. Within a few years he had established the reputation he retained for the rest of his life, not just as a theatrical photographer, but as New York's leading portraitist. The real basis for this reputation was neither the "painted backgrounds and interesting accessories" nor the "new and exciting variety of poses, gestures and expressions" he used, as Bassham suggests, but rather, as his competitor Benjamin Falk said, his "gift of seizing what was characteristic and picturesque in his subjects."

To be fair, Bassham is writing about Sarony only as a theatrical photographer, and the choice of pictures (each has a biographical note) reflects that emphasis with their painted backdrops, fancy props and costumes, and stagy poses, many depicting prominent stage personalities in famous roles: Otis Skinner in *Henry VIII*, Lester Wallack in *Rosedale*, Julia Marlowe in *Twelfth Night*. A few true portraits, however, are included, most notably those of Edwin Forrest and Edwin Booth, and they reveal the accuracy of Falk's analysis.

Admittedly, these criticisms reflect a biased opinion that Napoleon Sarony deserves more than Bassham gives him. The real contribution of *Theatrical Photographs* is to draw attention to Sarony, to provide a biographical assessment of him and to reproduce about 50 of his photographs, including some of the best.

Unlike Napoleon Sarony, Fred Fehl was solely a professional theatrical photographer. He began his career only in 1940, at a revival of *Liliom* with Ingrid Bergman (her Broadway debut), Burgess Meredith and Elia Kazan. Until now, his reputation has been limited to the world of the theater. Fehl was, according to William Stott, the first American professional *performance* photographer—an innovator in the use of a 35mm Leica camera and a high-speed lens to record the dramatic highlights of a stage performance without interrupting the action or the mood of the drama.

In today's esthetic this kind of photography is not highly regarded, although it does demand technical competence and a high sensitivity to the unfolding situation. Performance photography is really a specialized branch of photojournalism

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of which Fred Fehl was clearly a master.

The text of *On Broadway,* however, is even more interesting than the pictures. The comments of actors and actresses, directors, producers and choreographers from the original productions Fehl photographed between 1940 and 1968 are simply fascinating–partly because the statements quoted were frequently made from personal recollections of the shows. Participants are George Balanchine, Marc Connelly, Hume Cronyn and Jessica Tandy, Melvyn Douglas, Helen Hayes, Julie Harris, Harold Clurman–some 40 in all.

Fehl's closing picture shows Eydie Gorme and Steve Lawrence in *Golden Rainbow* (1968, 135 performances). For a caption the Stotts chose John Lahr's remark: "At $11 a seat, better you should buy a bush for Israel."

On Broadway exemplifies the unique power of oral history to yield compelling, often poignant, personal insights into events when skillfully combined with photographs. It is not a book meant for people interested in photography as a fine art; it is a wonderful picture-book history of the modern American theater. *–Will Stapp,* Curator of Photographs, National Portrait Gallery

Fehl's effervescent Pat Rooney, 1951.

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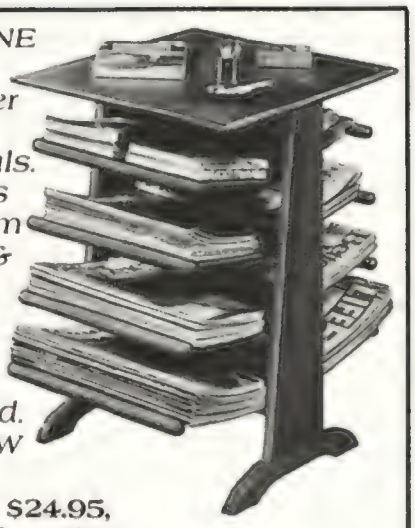

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Of Wolves and Men
Barry Holstun Lopez
(Charles Scribner's Sons, $14.95)

"I am in a small cabin outside Fairbanks, Alaska, as I write. . . . Outside, at thirty below, wood for the stove literally pops apart at the touch of the ax. . . . In the dead of winter hardly anything moves. It's very hard to make a living. Yet the wolf eats. He hunts in the darkness . . . stays warm. He gets on out there."

Men, including author Barry Lopez whose words these are, have been awed by wolves since the Pleistocene epoch, and the Man-wolf relationship has evolved in a variety of forms—hunter-hunted, werewolf, wolf-god, wolf-mother, even the huff-and-puff-blow-your-house-down variety. Because people know most about what they *imagine* the wolf to be ("the appropriate symbol for greed or savagery, the exactly proper guise for the Devil"), Lopez attempts to present "a different wolf from that ordinarily given us in the course of learning about animals." He succeeds.

He treats the wolf as a biological entity, as a species coexisting with Man, as Man's competitor. With a scholar's eye, he examines the origins of modern society's attitudes toward this fascinating creature in such disparate places as a 12th-century bestiary, the life of an obscure English saint, Dante's 14th-century *Divine Comedy* and a 15th-century edition of Pliny's *Natural History*.

The first wolf we meet is a hypothetical young male loping through the Canadian Rockies. His body, "from neck to hips, appears to float over the long, almost spindly legs and the flicker of wrists, a bicycling drift through the trees. . . ." From this sleek Everywolf, Lopez moves to a nutshell glimpse of form and structure, a discussion (it could be better) of the origin and evolution of the genus *Canis* and some natural history. Family life, seasonal changes in social dynamics, communication, prey selection, hunting strategies, use of space and relationships with other species—this biological information is basically sound.

We then meet the vision of the wolf as seen by Nunamiut Eskimos, Naskapi Indians and other Arctic hunting peoples who, like this animal, have developed effective solutions to survival in the North. Through Lopez we appreciate the breadth and acuity of their perceptions.

But his preoccupations with the notions of "sacred meat" ("Can hunting be regarded as a sacred occupation among wolves?" as it is among the Naskapi?) and the "conversation of death" (in which prey and predator "choose for the encounter to end in death") lead to a mystical consideration of wolf predation, with anthropomorphism and pure corn dripping from the pages. Here the author breaches his own warning that "wolves are wolves, not men." But this will not bother every reader.

A fine historical perspective of the European and American wolf slaughter is cast against the attitudes of the times. Today's methods of "wolfing" by airplane, snowmobile and pickup are exposed. A first-class account is given of the wolf in mythology and material culture, with an engaging collection of stories, anecdotes and ceremonies.

The author is obviously enchanted with wolves. He frankly makes the point, however, that his perspective was not biological and that he "was distrustful of science . . . because it was narrow." His charge that wildlife biologists lack imagination may raise a few hackles among those who reflect that what one knows of biologists, like wolves, is "only a perception in a particular set of circumstances." This overt antiscience ax-grinding tends to detract from the many pages that contain sounder thoughts.

But these criticisms aside, the book's wealth of history and literature makes it a valuable companion to *The Wolf* by L. David Mech, an authority to whom Lopez pays gracious tribute.

—Dr. Christen Wemmer
National Zoological Park

Arctic wolves: devils or huff-and-puffers?

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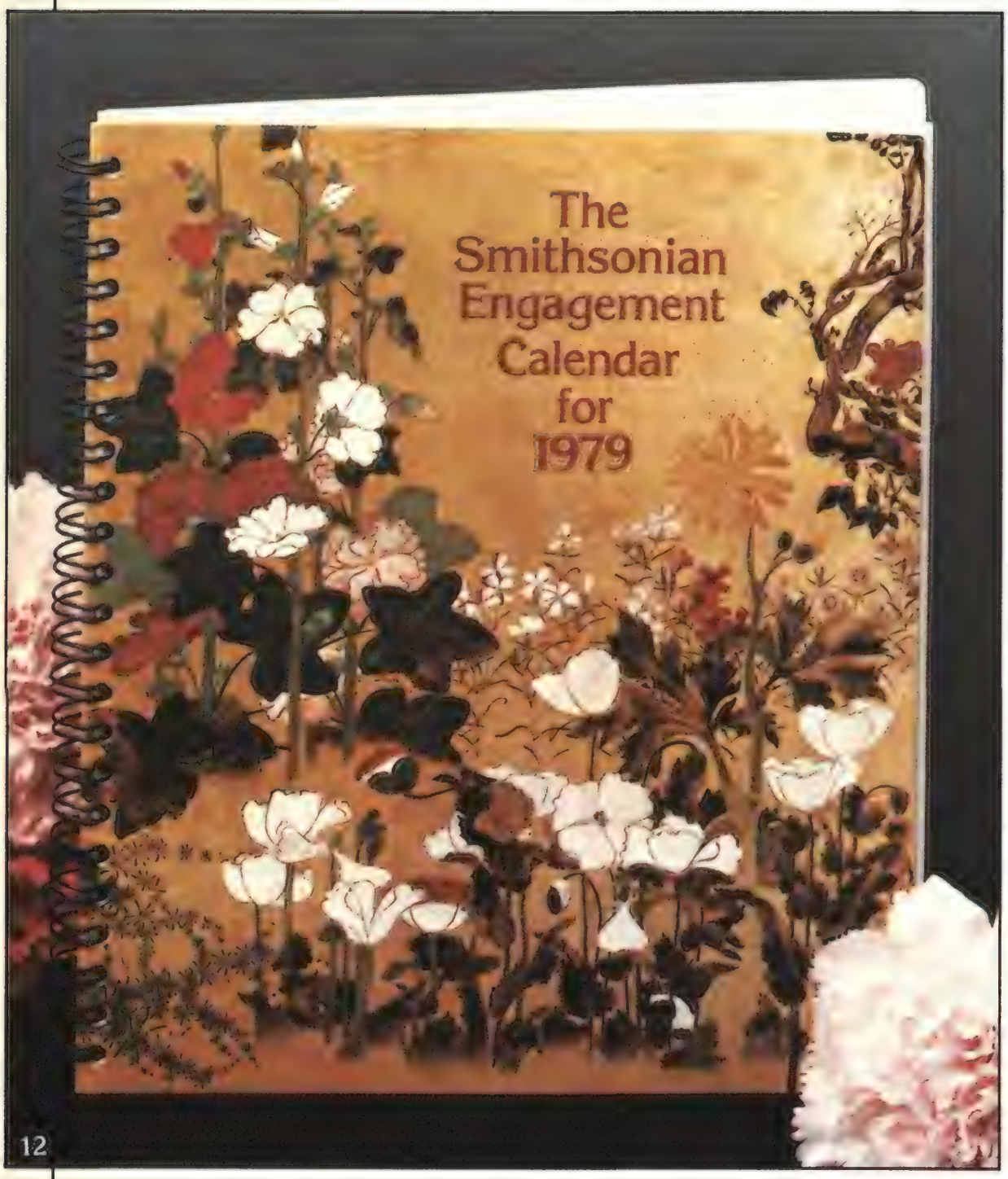

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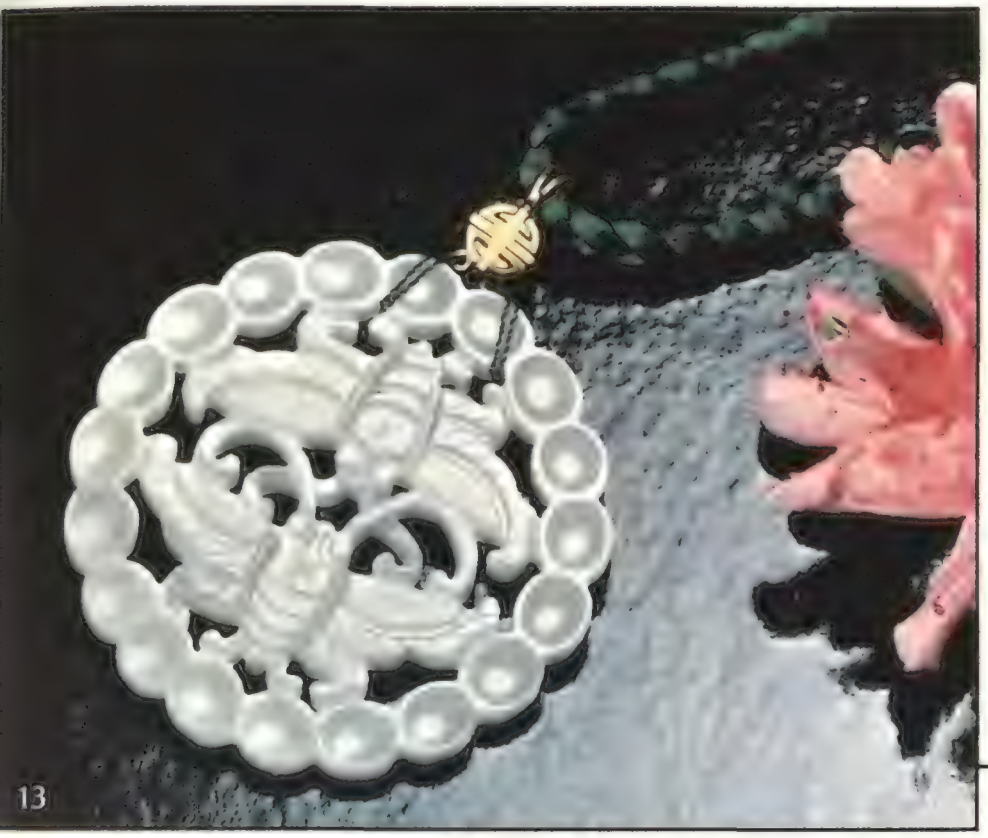

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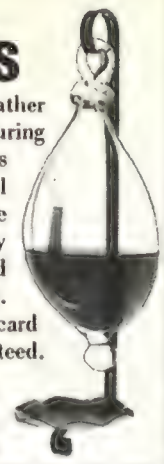

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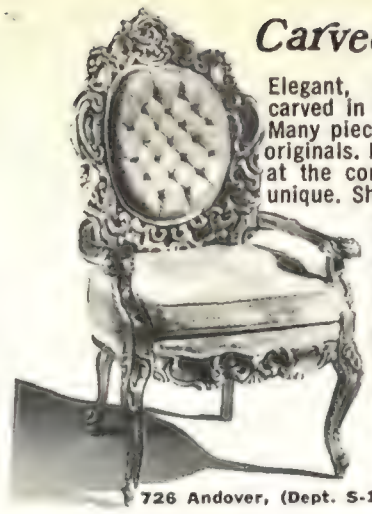

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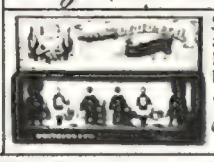

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Scores of new and ongoing Smithsonian exhibits this month highlight the American artist working in a wide range of mediums—oil, watercolor, pastel, plaster, glass, stoneware, film and woodcut.

After five fruitful years as the Smithsonian's in-residence chamber ensemble, the Theater Chamber Players move on—happily, to the Kennedy Center—but not before a nostalgic farewell concert at Baird Auditorium.

(National Associates planning a Smithsonian visit may request an information packet in advance by sending a postcard or telephoning the Associates Reception Center, the Smithsonian Institution, Washington, D.C. 20560, 202-381-6264; please allow two weeks for receipt.)

Louis M. Eilshemius: Selections from the Hirshhorn Museum and Sculpture Garden, November 9-January 1.
These visionary landscapes and nudes remain controversial nearly 40 years after this talented but eccentric artist's death (pp. 98-105).

William Penhallow Henderson, 1877-1943: An Artist of Santa Fe, National Collection of Fine Arts, November 10-June 10. Ceremonial pueblo Indian dances and other related subjects, mostly in pastels.

Battle of Britain Seminar, Air and Space Museum, November 15, 8:30 P.M.
Adolf Galland, the German Battle of Britain fighter-commander (103 victories), is joined by two veteran British aces who were also there, Sir Douglas Bader and Stanford Tuck.

Remensnyder Stoneware Collection, Museum of History and Technology, November 17—History of stoneware from the northeastern and mid-Atlantic states.

Glass by Dale Chihuly: The Cylinder and Basket Series, Renwick Gallery, November 17-June 3.
American Indian baskets inspired some of the intricate designs of this foremost hot-glass craftsman and artist.

Vienna Moderne: An Exhibition of the Arts of the Vienna Workshop, Cooper-Hewitt Museum, New York, November 21-February 4.
"Ornament is a crime!" cried many members of this Viennese Secession "art nouveau" movement (1898-1918).

American Color Woodcuts: The Years of Transition, National Collection, November 23-February 25.
The color relief print—primitive 19th-century theatrical posters through new forms inspired by color and turn-of-the-century American, Japanese woodcuts.

Worlds of Tomorrow, Air and Space Museum, Albert Einstein Spacearium, opens in mid-November.
New show (quadraphonic sound) foresees astronaut on Mars, planet with two suns, and huge, self-supporting space colony.

Continuing events and exhibits

"The Brush of the Masters: Drawings from Iran and India," Freer Gallery of Art. Four court paintings and 82 court drawings from 1400 to 1800 (pp. 144-150).

Death of a Legend, Museum of Natural History, November 20, 5:45 P.M., at Baird Auditorium.
This film on the wolf's life cycle is supplemented with an Audubon Series lecture by Scott Barry and John Harris who give a timber wolf named Slick a walk-on part.

Saul Steinberg Retrospective, Hirshhorn Museum through November 26.
Some 200 works by famed *New Yorker* artist and mask-, table- and collage-maker.

Women in Science in 19th-century America, Museum of History and Technology.
Kate Furbish, discoverer of Furbish's lousewort (p. 122), is one of many American women who pioneered in the sciences.

Perceptions and Evocations, The Art of Elihu Vedder, National Collection. Major exhibit of 350 paintings, drawings and sculpture by an American-born artist who spent most of his life in Italy.

Facing the Light: Historic American Portrait Daguerreotypes, National Portrait Gallery.
Daguerreotype images of 110 prominent Americans include Emily Dickinson, Horatio Alger and Henry James jr. and sr.

The Harmonious Craft: American Musical Instruments, Renwick Gallery.
Dulcimers, recorders and ocarinas are just a few of 100 handcrafted objects.

Ornament in the Twentieth Century, Cooper-Hewitt.
The Beatles' rococo Rolls-Royce and 499 other items show ornamental form isn't obsolete in this form-follows-function era.

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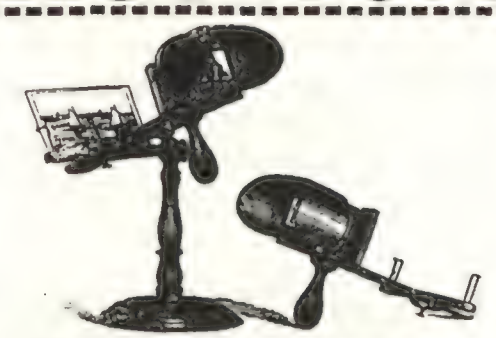

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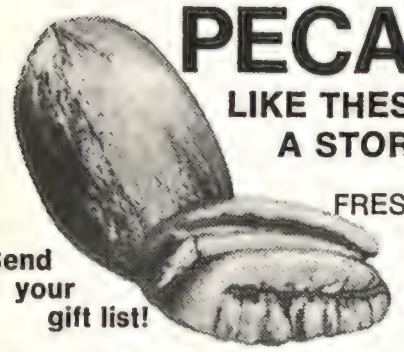

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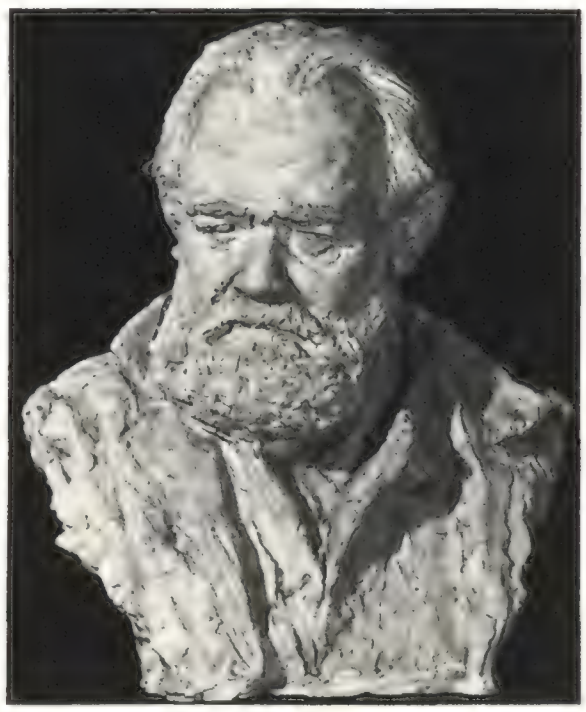
Jo Davidson Portrait Sculpture, Portrait Gallery's Jo Davidson Room. This room's ten Davidson busts include the American sculptor's 1946 self-portrait (below).

Division of Performing Arts (box office number is 202-381-5395)

- Marlboro, Vermont's celebrated young chamber musicians are at Baird Auditorium, Natural History Building, November 4, 5:30 P.M.
- The 20th Century Consort and contemporary chamber music at Hirshhorn Auditorium, November 5, 7 P.M. (open rehearsal, November 3, 5:30-7:30 P.M.).
- Al Cohn and Zoot Sims, tenor saxaphonists and longtime jazz collaborators, are joined by pianist Jimmie Rowles at Baird Auditorium, November 12, 8 P.M.
- Five young vocalists open the American Musical Theater Series with the songs of Victor Herbert at Baird Auditorium, November 18 and 19, 8 P.M.
- The Theater Chamber Players' final Smithsonian encore (*i.e.* Haydn's E Major piano trio and Schönberg's *Pierrot Lunaire)* at Baird Auditorium, November 27, 8:30 P.M.

Upon Arrival at the Smithsonian

Members are invited to begin their tour by registering with the Associates receptionist in the Smithsonian castle on the Mall, where special orientation materials are available daily between 10 A.M. and 4 P.M.; where membership cards can be replaced (upon showing your SMITHSONIAN address label); and where the Associates lounge, a peaceful oasis, is located.



The Court
The Associates' own restaurant in the Museum of Natural History—membership cards required, buffet-style: lunch weekdays (11 A.M.-3 P.M.); breakfast Saturday and Sunday (8:30 A.M.-11 A.M., use Constitution Avenue entrance); and brunch weekends (11 A.M.-3 P.M.).

Museum Hours
Most museums are open 10 A.M. to 5:30 P.M. daily, with the exception of National Zoo buildings (9 A.M.-4:30 P.M.) and Anacostia Neighborhood Museum (10 A.M.-6 P.M. weekdays; 1 P.M.-6 P.M. weekends).

Public Dining Facilities
Museum of History and Technology cafeteria (11 A.M.-2 P.M. daily); snack bar (10 A.M.-5 P.M. daily). Snack bars also open daily in Air and Space Museum (11 A.M.-5 P.M.) and Museum of Natural History (10 A.M.-5 P.M.). National Zoo cafeteria (8:30 A.M.-4 P.M.); outdoor snack bars, weather permitting, on weekends. Freshly prepared sandwiches, soups and salads served in National Collection of Fine Arts' and National Portrait Gallery's Patent Pending restaurant (11 A.M.-3:30 P.M. weekdays; 11:30-4 P.M. weekends).

Parking
Free parking—a very limited amount—is available on Madison and Jefferson Drives along the Mall. Air and Space Museum's underground garage on 7th St., S.W., just north of Independence Ave., is open 7 A.M.-6:30 P.M. weekdays; 9:30 A.M.-6:30 P.M. weekends, holidays; (75 cents an hour for first three hours; $1.10 an hour thereafter).

Smithsonian National Associate Regional Program

The six cities chosen to host next year's National Associate Regional Program are San Diego (January 26-February 4); Atlanta (February 13-21); Denver (March 4-11); Philadelphia (March 28-April 11); Hartford (April 16-25); and New Orleans (April 27-May 6). National Associates in these cities will receive invitations to attend the series of lectures, workshops and exhibitions presented at local museums to highlight the broad range of research currently under way at the Smithsonian in such fields as botany, archaeology, zoology, geology, gemology, historical portraiture and nature photography.

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Oh, Kay!
Written as a vehicle for Gertrude Lawrence, this 1926 Gershwin hit also spotlights performances by the composer himself. Including *Someone to Watch Over Me, Clap Yo' Hands, Maybe.*

Anything Goes
Performances by the original New York and London casts—including Ethel Merman—and Cole Porter himself recreate the 1934 show. Including *I Get a Kick Out of You, You're the Top, Blow, Gabriel, Blow.*

Lady, Be Good!
Fred Astaire even taps to Gershwin's piano accompaniment in this reconstruction of the 1924 show starring Fred and his sister Adele. Including *Oh, Lady Be Good!, Fascinating Rhythm, Half of It Dearie Blues.*

Ziegfeld Follies of 1919
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SITES circulates exhibitions to hundreds of cities throughout the nation. To sponsor an exhibit in your community, write to Eileen Harakal, SITES, Smithsonian Institution, Washington, D.C. 20560. Here are a few November samplings:

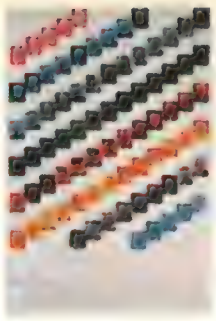
- Gainesville, Florida—"Space Art from the USSR," Santa Fe Community College, November 4-December 3.
- Logan, Kansas—"Indian Baskets of Western North America," Dane G. Hansen Memorial Library, November 4-December 3.
- Baton Rouge, Louisiana—"Black Women: Achievement Against the Odds," Louisiana State University Union, November 18-December 17.
- Annapolis, Maryland—"The Hidden World of Misericords," St. John's College Art Gallery, November 15-December 12.
- Princeton, New Jersey—"One Man's Vision: The Graphic Work of Odilon Redon," Princeton University Art Museum, November 18-December 17.
- Albuquerque, New Mexico—"Exhibition Flight: Barnstorming, Air Racing and Aerobatics," Albuquerque Public Library, November 4-December 3.
- Pittsburgh, Pennsylvania—"Close Observation: Oil Sketches by Frederick E. Church," University of Pittsburgh Art Gallery, November 11-December 24.

Radio Smithsonian

This program of music and conversation is broadcast weekly on approximately 50 stations across the country. For local times, contact your public radio station:

- "Our Oldest National Collection"—the 150-year-old National Collection of Fine Arts (week of November 5).
- "The Noble Buyer: John Quinn"—the most important art collector in pre-Depression America (week of November 12).
- "Wings"—the joys of bird and butterfly watching through the well-schooled eye of Smithsonian ornithologist Roger Pasquier (week of November 12).
- "The Growing National Gallery" of Art—its newest acquisition, the East Building, and a recent show, "The Splendors of Dresden" (week of November 19).
- "From Penzance to Pinafore"—narrator Reginald Allen is nation's premier authority on the musical team of Gilbert and Sullivan (week of November 26).

A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Images from Air and Space: An Award Winning Poster Series.

The National Air and Space Museum commissioned New York designers Tomoko and James Miho to create a series of posters inspired by exhibits in the museum. Both decorative and informative, their series combines colorful, unique design with factual text to express the spirit of achievement in air and space. Since their publication in 1976, a number of the posters have won awards from *Graphis,* The American Institute of Graphic Arts, *Communication Arts,* and other prestigious competitions. Formerly available only at the museum, now you may order them by mail. Distinctive and original, these 24″x36″ posters make an unusual gift, attractive wall decoration, or a valuable educational tool.

A. *The Lone Eagle:* Lindbergh was the first to fly solo nonstop across the Atlantic. He made this historic flight in 1927 in his Ryan NYP single engine plane, "The Spirit of St Louis." The plane is silver with black markings; red background, white type

B. *Pioneers of Flight:* The people pictured made significant contributions to Aeronautics and Astronautics. Photographic strips: silver, green, red, yellow, brown, and blue; white background, black type

C. *The Stars Are In Us:* Why study the stars? They hold the answers to the mysteries of our universe. Light and dark purple, white type

D. *Flight and the Arts:* Reproduction of *Sky Garden* by Robert Rauschenberg (American, b.1925) which is part of his Apollo Stoned Moon print series. Full color

E. *Day and Night:* Earth phase photographs taken by satellite 22,300 miles above the earth show the pattern of daylight and nightfall. Blue and white photographs, black background

F. *Americans Step into Space:* All manned U.S. space flights, dates, the men who flew them, the accomplishments of each mission. Shades of gold, red type, blue spacecraft

G. *Friend? or Foe?* The planes of WWII, both Allies and Axis The game: to identify the planes and their nations. Red, white, blue, and black on silver foil

H. *Kill Devil Hills, N.C.:* The Wright Flyer was the first heavier-than-air machine to carry a man, take off from a level place under its own power, achieve sustained and controlled flight, and land at a point equal in elevation to the take-off point. Tan, antique brown, white type

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Foreign Charter Tours

Kenya, East Africa*—February 1-18, 1979: Wildlife and tribal life adventure providing modern insight—and the Africa that "used to be," in the old safari tradition. Seminars in Nairobi and in the field—Masai Mara; Samburu; Kilaguni.

The Bavaria of Ludwig II*—April 9-23: The fantastic architecture created for Ludwig II, builder of the fairy-tale castle of Neuschwanstein and patron of Wagner. Sample Munich's museums and cultural life; travel through the Bavarian Alps and up the "Romantic Road" of Gothic towns and castles; visit Wagner's Bayreuth with its famous Festspielhaus.

Springtime in Greece*—April 29-May 15: A program in Athens and a day cruise to Hydra and Aegina, followed by visits to the renowned sites of ancient civilizations when the countryside is a paradise of wild flowers. An inland tour to the Peloponnesos, Epirus, Thessaly, the Pelion peninsula and the country around Delphi highlights the mountains and rich flora.

Paris and the French Countryside*—May 13-27: Museum lectures, a walking tour of the islands of the Seine and excursions to Chartres and Malmaison plus a choice of a week-long travel seminar to Burgundy to visit Dijon, Beaune and other towns of this wine and food center; Provence, including Avignon, Aix-en-Provence and Marseilles; or Normandy and Brittany's picturesque coastal towns and villages.

Russia*—May 20-June 3: Leningrad, Tallinn and Moscow; see the Hermitage and Tretyakov Museums, the palaces of Pushkin or Petrodvorets, the ancient Kremlin with its old churches and Armory Museum; visits to schools, factories or clinics; theater and circus.

Midsummer Night*—June 20-July 4: This tour to the upper reaches of Europe begins in Rovaniemi, Finland, on the Arctic Circle. Celebrate the year's longest day with Midsummer Night festivities, travel through Lapland to the breathtaking mountains and dramatic fjords of northern Norway, journey by coastal steamer to the North Cape. Tour ends with a program in Helsinki, one of Europe's most stimulating cities.

Scotland*—September 9-23: Edinburgh and beyond—a program of walking tours and special visits to castles, abbeys, battlefields and archaeological sites through the Highlands and Lowlands of Scotland.

Oxford/Smithsonian Seminar—September 14-29: This exciting new program offers an opportunity to select from a unique curriculum taught by members of Oxford University's faculty and to live in Worcester College. Lectures, field trips and an array of special seminars are offered to utilize the rich resources of the university, the Ashmolean Museum, Bodleian Library and the town of Oxford itself.

Sultans' Treasures*—September 23-October 7: An adventure tour to Istanbul and Asiatic Turkey, including the royal treasury and collections at Topkapi Palace, the Blue Mosque, an evening in a Turkish home and a cruise on the Bosphorus. Select a separate excursion to Aegean Turkey, or to Anatolia and Cappadocia.

Spain*—September 30-October 14: Madrid with museum visits, Spanish folklife and crafts, and day excursions to Toledo or El Escorial. Week-long travel to the Basque country and Barcelona; Andalusia and Córdoba; or the Pilgrimage road to Santiago de Compostela.

Low cost of tours includes first-class hotels, most meals, sightseeing, lectures, theater tickets and air fare. *Indicates that optional predeparture course will be available.

Domestic Study Tours

Christmas at the Smithsonian—December 8-10: Seventh annual Christmas weekend with traditional tree-trimming party and special behind-the-scenes tours.

Yosemite in Winter—January 26-February 4: Absorb the splendor of Yosemite in winter, while learning about this unique park under the guidance of Yosemite Institute staff. The program will include cross-country skiing and evening lectures on subjects such as forest ecology, glaciology, astronomy and wildlife.

Baja Whale Watch—February 9-17 or February 17-25: Observe gray whales and marine life from San Diego to San Ignacio Lagoon on a sport-fishing boat. Study natural history of Baja coast and islands.

South Texas Wildlife—February 24-March 4: Follow the winter bird migration to the warm climate of the Gulf and Rio Grande Valley to explore the fascinating wildlife refuges of Aransas, Padre Island, Laguna Atascosa and Santa Ana.

New York—March 30-April 2 or April 6-9: Repeat of a popular weekend program featuring special lectures and tour of King Tutankhamun exhibit.

Mississippi—April 20-28: Learn about the history and architecture of Jackson, Vicksburg and Natchez under the auspices of local preservationists.

Washington "Anytime" Weekend: Choose any weekend to enjoy a special tour of the original Smithsonian building, spend two nights at Loew's L'Enfant Plaza Hotel close to the Mall, and see other sights in Washington by Tourmobile. Reservations and payments must be received at least ten days prior to arrival.

Foreign Study Tours

Red Sea Passage—February 1-11, 1979: Revised version of the very popular voyage of this past winter. Sail from Suez on the *Argonaut,* visit Karnak, Luxor, Valley of the Kings and Abu Simbel in Egypt, Petra in Jordan. Stay at the Mena House Hotel next to the Pyramids for Sakkara and Memphis, the mosques, bazaars and Archaeological Museum of Cairo. *Cruise subscribers may add one or both of the following two options:*

Jerusalem Prelude—January 25-February 2: Also visit Damascus, Baalbek, Basra and Jerash before boarding in Suez.

Tanzania Game Preserves Postlude—February 11-18: Fly from Cario to Kilimanjaro, visit Arusha, Ngorongoro Crater, Serengeti and Lake Manyara. Return to the United States via London.

Himalayan Cultures—March 21-April 15: Delhi, Agra, Calcutta, Darjeeling, Nepal (including tigers and Everest viewing) and Bhutan for a five-day exploration.

The Lands of the Hapsburgs—May 14-June 5: View palaces, sites of countries once dominated by ruling family of the Austro-Hungarian Empire; Venice, Trieste, Salzburg, Linz, Budapest, Vienna, Bratislava and Prague.

Write Smithsonian Associates Travel Program, A&I 1278, Smithsonian Institution, Washington, D.C. 20560 or call (202) 381-5635.

in Washington

Selected Studies Seminars

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American Antique Furniture—March 18-23: Dealing with the appreciation of antiques, 1650-1840 (repeat).

Astronomy of the Ancients—March 25-30: Leading authorities and widely known writers who are attracting widespread attention in the rapidly growing field of archaeoastronomy discuss the intriguing discoveries and hot debates concerning ancient peoples' sophisticated knowledge of the sky. Illustrated lectures include monumental Stonehenge; the Egyptian pyramids; the temples, cities and other impressive stone alignments of the Mayans; the methods of the Babylonians and the early American Indians.

French Impressionist Painting—April 1-6: Illustrated lectures and in-depth tours of the great works of Monet, Degas, Renoir, and other masters in the outstanding collection of the National Gallery of Art explore the phenomenon of Impressionism, its origins and position with regard to the art, science and thought of 19th century France, its esthetic achievement, and its legacy today.

Horticulture—April 29-May 4: This practical approach to 18th-20th century gardening features illustrated lectures and tours of major sites, including the world-renowned DuPont estates of Longwood Gardens and Winterthur Museum Gardens; the Smithsonian, the National Arboretum, Hillwood Museum, Dumbarton Oaks, and Mount Vernon (repeat).

The Arts of Japan—May 21-25: Major artistic traditions of Japan including scroll painting, calligraphy, and sculpture from 10,000 B.C. to the present with particular emphasis on the impact of Shinto, Buddhism, China, Korea, and the West in the formation of Japanese taste. Lectures, films, and tours, special events focusing on Japan today.

Please send requests for full information on program content, accommodations and registration fees by seminar title to: Selected Studies, A&I 1280, Smithsonian Institution, Washington, D.C. 20560.

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By Michael Olmert

To get in a famous last word, better find a good first one

" 'Take my camel, dear,' said my aunt Dot, as she climbed down from this animal on her return from High Mass."

A great line, the opening sentence of British author Rose Macaulay's *The Towers of Trebizond*. If the rest of the book is as surprising and tart as that first line, you say, then it'll be a great read straight through.

It is. Which brings up a notion about literature I've been incubating for some time. If a book's got a classy "topic sentence," as it used to be called, then it'll be a winner. Like this: "As Gregor Samsa awoke one morning from uneasy dreams he found himself transformed in his bed into a gigantic insect." That's Franz Kafka's *Metamorphosis*. By contrast, in an earlier *Metamorphoses,* Ovid started the ball rolling like this: *"Animus fert dicere formas mutatas in nova corpora."* ("My mind inclines me to speak of forms changed into new bodies.") Now, which one would you want to continue reading? Ovid's is clearly the unclassy kind of book that gets left in railway stations and on airplane seats.

When the author is deciding what to put in that first sentence, he's taking a calculated gamble. He wants to attract your attention. He wants you to like his characters and the fixes they get into. But mainly he wants you to keep on reading.

Everybody knows Melville's "Call me Ishmael" from *Moby Dick,* "It was the best of times, it was the worst of times," from Dickens' *A Tale of Two Cities,* and Tolstoy's first hint of the troubles to come in the chronicle of *Anna Karenina,* "Happy families are all alike; every unhappy family is unhappy in its own way." And there is the jolting start of *1984*: "It was a bright cold day in April, and the clocks were striking thirteen." Sneaks up on you, right?

The direct literary ancestors of Orwell's opening are a combination of Hardy's *The Return of the Native* ("A Saturday afternoon in November was approaching the time of twilight, and the vast tract of unenclosed wild known as Egdon Heath embrowned itself moment by moment") and Dostoevsky's *The Idiot* ("At nine o'clock in the morning, towards the end of November, the Warsaw train was approaching Petersburg at full speed"). Orwell was no amateur. He knew that clocks and landscape could amount to an unbeatable combination.

But a writer who doesn't like the pick-two-from-column-A school of creative writing can always fall back on what must be the single-most-popular item in all first lines: Dad.

Thus, Swift in *Gulliver's Travels*: "My father had a small estate in Nottinghamshire; I was the third of five sons." Or Dickens in *Great Expectations*: "My father's family name being Pirrip, and my Christian name Philip, my infant tongue could make of both names nothing longer or more explicit than Pip." These, and countless others like them, lead directly to Fitzgerald's *The Great Gatsby:* "In my younger and more vulnerable years my father gave me some advice that I've been turning over in my mind ever since."

Long, expository first sentences were often the rule, until Mark Twain wrote this one in *Huckleberry Finn:* "You don't know about me without you have read a book by the name of *The Adventures of Tom Sawyer,* but that ain't no matter."

Clearly, the 19th century was over then. All the great novelists had noticed that human nature had changed. To such a degree that Marcel Proust could start *Swann's Way* like this: "For a long time I used to go to bed early."

That was it. No holds barred, and succeeding generations would be able to read: "Mother died today" (Albert Camus, *The Stranger*), "It was a pleasure to burn" (Ray Bradbury, *Fahrenheit 451*), and "Hale knew they meant to murder him before he had been in Brighton three hours" (Graham Greene, *Brighton Rock*).

The mind-set that gave us all those novels is of a piece, as is this: "Robert Cohn was once middleweight boxing champion of Princeton," from Hemingway's *The Sun Also Rises.*

No one has either the dedication or the constitution to read the entire corpus of modern literature. There is simply too much of it. And it's just as well; literature can be a very uneven thing. You could, however, make a run at the course by reading only first lines.

Of course, this front-end-only analysis does have its drawbacks. Detective fiction would be somewhat less than satisfying. As for poetry, "Arms and the man I sing" gives a nice feel for the rest of the *Aeneid,* but it's much harder to get a handle on *The Wasteland* with only "April is the cruellest month" to go by. And I'll have to admit that my theory is a complete flop for the drama. I mean, who'd have thought that the full weight of *Hamlet* could have been pulled along behind this innocuous opening: "Who's there?"

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